

MAIN CURRENTS

IN MODERN THOUGHT



A Cosmic Mirror
Han Dynasty
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SPRING 1949

MAIN CURRENTS IN MODERN THOUGHT

A co-operative journal to promote the free association of those working toward the integration of all knowledge through the study of the whole of things, Nature, Man, and Society, assuming the universe to be one, dependable, intelligible, harmonious.



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"Ah, but a man's reach should exceed his grasp, or what's a heaven for?" — BROWNING

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MAIN CURRENTS IN MODERN THOUGHT is published quarterly to call attention to significant contributions to learning currently being made by leading workers in the multiple fields into which knowledge has come to be classified. It relates these advances to each other and to the classical and contemporary views of Eastern, European and American thinkers. It is designed to save time for the reader by providing a vantage-ground from which the whole world of knowledge may be surveyed and kept in proportion as it moves toward integration. Its editors assume that the principles of art, the universals of philosophy, the laws of Nature and Man as formulated by science, and the truths of comparative religion, can be orchestrated into a harmonic, meaningful, ethical body of teachings which can and should be made the central core of curricular study in the educative process at all levels of development. In condensing text, square brackets [] indicate editorial interpolation. Three dots . . . in the text indicates a word, phrase or passage omitted in the interest of brevity or clarity. Other usages are standard. \$3.00 a year, Foreign \$3.50. Contributors to MAIN CURRENTS enjoy full liberty of opinion and expression in these pages. Copyright 1949, by F. L. Kunz, Port Chester, New York, to whom all communications regarding MAIN CURRENTS IN MODERN THOUGHT should be addressed. Entered as second class matter April 13th, 1946, at the post office at Port Chester, New York, under the Act of March 3rd, 1879.

INTEGRATIVE RESEARCH

Editorial Summary

The working organization of the FOUNDATION FOR INTEGRATED EDUCATION has now been advanced to the stage when a description of methods and functions should interest a considerable audience distributed in many countries. Pending the publication in due course of a formal account, the following may be timely.

The FOUNDATION exists to pursue and promote research into topics which have integrative significance; to collect and to disseminate such conceptual gains from and through many educational channels; and to carry on manifold auxiliary activities which will ensure that the work of the FOUNDATION shall be integral with all educational aspects of life.

The central purpose being research of the nature described, it follows that the major responsibilities must rest upon the group of scholars willing to carry on or to supervise appropriate studies. This is the duty of the Research Coordinating Board, which was approved at an organization meeting of scholars and laymen on December 4-5, 1948, under the chairmanship of the President of the FOUNDATION, Dr. Kirtley F. Mather, reported in the last preceding issue of MAIN CURRENTS. (The transcript of Dr. F. S. C. Northrop's informal address, opening the proceedings on December 4th, will be found elsewhere in this present issue.)

At the adjourned meeting of the available members of this group, with some additions, on January 15, 1949, also under Dr. Mather's chairmanship, it was agreed that since the Research Coordinating Board should be established for the sole purpose of conducting studies in topics significant for synthesis, the Board would need to be sufficiently large to include all major branches of learning; and since a body of such dimensions, made up of scholars of high rank already charged individually with many duties, could not be expected to meet frequently, therefore, a small Executive Council should be authorized to meet at regular intervals, and act *ad interim*.

It was further agreed that the Chairman of the Council should also be the Chairman of the Board.

The name of Dr. Henry Margenau, Yale University, was proposed by Dr. Edmund W. Sinnott. The suggestion was received with unanimous satisfaction by the Board, the President of the Foundation, and subsequently by the Provisional Executive Committee, which has had initially the responsibility of giving general direction to the FOUNDATION's work.

Dr. Margenau has accepted this invitation, and the supremely critical task of directing and promoting the required studies has thus been most happily undertaken. For the Chairman is Professor of Physics, and of Natural Philosophy, at Yale. He is probably best known in the field of mathematical physics, but his second professorship indicates much wider interests. Since it is in the field of physics that the chief philosophical convulsions have occurred in recent years, finally exploding the edifice of 19th century learning into notions of dancing waves and elusive particles, it is seemly and just that the task of leading a repair party should fall to a physicist. The labors ahead will engage every species of talent, but if a consensus is to be progressively achieved, some of the most solid parts of the scaffold for the reconstruction must be basic principles of this most fundamental of the sciences.

It has been agreed from the beginning that the Board will itself engage actively in a very few carefully defined projects of its own selecting, as well as constantly watch for new knowledge of particular conceptual significance which comes forward from time to time in many fields of learning. On behalf of the Board, the Council has promptly begun this work of discussing and approving three or four significant studies, meeting for this purpose first on February 12th. Such enterprises will be formally identified and reported upon in these pages from time to time. Meantime a summary of thoughts expressed on February 12th, leading up to precise identification of proposed study projects, may be of interest.

The discussion showed a conviction that projects of over-all significance can be allocated in specific parts for technical examination in a given field, but it was concluded that, since the linkage of fields conceptually has not yet been achieved, it will be necessary to inquire into the principles and procedures leading to such linkage in order to avoid extemporized concepts which have no general validity outside their special fields.

Not only the operational competence of a given scholar or a group to investigate a given project, but also the ability to display the manner in which the concepts are formulated and what those concepts precisely are, will be necessary for the work in hand. That is, the question must be answered: How is the transition made from the data of a given discipline to its concepts?



Henry Margenau, Professor of Physics and Natural Philosophy, Yale University. Chairman of the Research Coordinating Board, Foundation for Integrated Education.

So much assumed, the questions next arise: Is there a technique by which a person or group can attain competence over several fields? Is not *method* the unifier? Is there a method in the physical sciences? In the correlational sciences? Is it not desirable to find over-lapping methods and state them clearly? Is not knowledge in a field only as good as the method in the field? Are there different modes of abstraction? What is the epistemic correlation? What are the rules employed in achieving it?

These considerations arise primarily from the fact that in the physical sciences the theoretic component in Nature is no longer directly intuitible in the form of models. Hence the rules of correspondence must be precisely stated. These are the operational definitions (Bridgman) in each specific science.

There seems to be wide agreement with regard to the structure of the exact sciences. In the views of Northrop, Sorokin, Sinnott and Margenau, the essential elements within every exact science are: 1) concepts by intuition (or immediate data), 2) concepts by postulation (or constructs), and 3) rules of correspondence (which link an element of class 1 with an element of class 2). These rules of correspondence are identical with, or closely related to, Kant's transcendental schemata, Bridg-

man's operational definitions and Northrop's epistemic correlations. Margenau has recently finished a book in which a detailed examination of these rules of correspondence in certain parts of a single science, namely, physics, is conducted. A similar clarification, which can be wholly beyond commitment to any particular philosophic view, and of truly integrative value, is needed in all the exact sciences.

A project which intends the achievement of this phase of the integrative process, is thus of primary importance. Quite apart from its detailed results it will be of value to the individual sciences. In addition, it will either show identity of method in several sciences—and this would be the first and the most basic step toward a synthesis—or it will definitely confute that thesis. In the latter case, interesting differences will be brought to light which now hide themselves in the dark regions between departmentalized disciplines.

Inasmuch as the work of the Foundation involves assistance to educators, it was concluded that in every project there should usually be careful identification of the historical occasions, or signal discoveries (Conant: "anecdotal method") which contribute to the concept, so that the actual materials for teaching purposes be collected for a new and conceptually rich teaching process. The contrast here is between logical-epistemological and psychological-historical analysis, both vital to the program.

The existence of a powerful ferment in the social sciences and no less in the physical sciences was noted as being opportune.

The task identified in the foregoing paragraphs can be interestingly, though perhaps not so centrally, engaged by means of various additional procedures. One of these may be called the historical case method. Northrop is among those who make it clear that every stable society rests ultimately upon a generally accepted insight, which encompasses the science of a given era. Educationally this is the socio-historical fact central to all other considerations. It is possible to examine—and it is proposed that we should examine—living societies, especially those of some seniority, to find out how each achieved its synthesis, what the outlook comprised, what values were actually realized (not merely idealized) in the social order, how all this was transmitted by education, and what were the juridic and economic expressions.

It will be evident that the concepts seen at work in the Mediaeval synthesis, with its guild economics, its social structure, its art, will be of remarkable interest and importance. So, at another extreme, will be the living stone-age society of the Australian aboriginal, or the north Greenland Eskimo. We shall certainly learn from India and

China. Out of this study younger societies, such as modern Russia and contemporary United States of America, will learn how to come to grips with their own data, and to form a valid philosophy. However novel our present knowledge may be in its technical aspect, however differently proportioned from past cultures in knowledge of energy, life and humanity, we can count upon getting help in developing the synthesis we need for our cultural purposes.

The welfare and safety of American society, in particular, and of mankind in general, are deeply involved. The leaders of the Soviet Union appear to believe that they have such a correct and durable interpretation of man and nature that new scientific information may safely be accommodated into their dialectical framework. An honest and competent inquiry will show wherein they are mistaken, and help the Russian people, but it will also help us, although our problem differs. We are happily committed to certain magnificent ideals, such as freedom, equality of early opportunity, abundance, stability and the like, but we have found our difficulties increasing since 1917 in realizing these ideals *as one whole*; until at last we have come to abandon some traditional values and practices, such as having no military conscription in peace time and non-interference abroad, in order to save other values, and then we find we are losing ground all along the line of truth and freedom. Many people hunt scape-goats for these failures, but the deepest cause lies here at home, in the conceptual breakdown. Our history shows that the 18th century concepts of the universe, out of which the American political and economic system arose, were gravely impaired in the 19th century. The Founders' philosophy was one which had a general conviction of a sublime spiritual order which could and did validate freedom. That philosophy has declined, but it can be, and must be, re-established on data and concepts which the 20th century richly affords. There, most deeply, we can rest our security.

Still another promising avenue to insight is through an overly neglected subject: form and function. Until lately randomness and statistical treatment of phenomena have been emphasized. Since 1900 a host of new topics, such as are familiar in genetics and gestalten, require us to arrest the tendency to consider form a minor, probably only chemico-mechanical, consequence of practical necessities in growth, reproduction, locomotion, and the like. Neglect of morphology has in turn closed us off from any adequate comprehension of function. Hence innumerable problems stand waiting, especially in psychology and therapeutics. Recently, in the very heart of physics and chemistry, form and properties (the



Kirtley F. Mather, Professor of Geology, Harvard University, President of the Foundation for Integrated Education.

lower rank of form and function) have had close attention, in studies of resonance theory, for example. A study of general morphology and hierarchically ranked functions promises not only a rich direct return, but possibilities of making many connections with other integrative topics.

Morphological study has, by its very nature, immediate conceptual meaning. A concept implies order, system, classification. When we speak of a physical constant we imply an entity independent of space and time. Constancy of form in nature is surely the witness of some variety of order superior to simple dependability. When thus understood it should afford means to new insight.

The advancement of selected integrative studies, and also the discovery and dissemination of others, wherever they may be found going on, should help to fill out and knit together the whole of learning, and also make possible in increasing measure a nationally acceptable three-phase experience: (1) more systematic and comprehensive content in general education in which conceptually signal events in experience can be shared by all students, (2) genuine mastery of those methods by which such concepts are derived and hence acceptance of the concepts as essential to truly scientific and

cultural growth, as against operative skills, (3) recognition of processes in understanding essential to grouping concepts together into the students' own over-all view.

The social effect of working up and spreading such a body of conceptual teaching content, holding together most fields of knowledge, will constitute a growing consensus rested not upon arbitrated opinion, but upon a large common content universally taught because it is indispensable to the progress of learning, and teachable because its data bulk is reduced by concentration on events of peculiar importance to thought, feeling, and life. When this is done, the content important to professional competence can be even larger in specialized courses of study, for the latter will have been lightened of their responsibilities of teaching the conceptual subject matter.

Something like this is the aim of many present programs in general education, but considerable duplication and waste of effort is inevitable until the material and techniques required for abstraction of principles is lodged in one common experience. And such concentration is impossible until it has been worked up in a manner generally, not only locally, acceptable.

The authority of such a consensus in American colleges will be formidable, yet the education which provides it will resemble in no way a regimented course. Everyone accepts the organization of the data of the elements in the periodic table and the quantum theory in physics and chemistry because the knowledge is established and important. We do not complain of regimentation in such cases for these concepts are widely taught on a basis of their own internal authority. Through many channels of exchange, the curricula of colleges come to resemble one another in data content. Exchange at that level does not, however, ensure that the associated conceptual treatment is more than rudimentary. To get a good general education at the level of significance the method by which the concept is derived must be made known and be as generally acceptable as the data. In the case of the periodic table of the elements not many are equipped to pursue the explanation down into its quantized level and so on beyond, nor the notion of morphology into space-time and beyond. Once such work has been done, it will spread because of cogency and because of need, just as data spread, or new techniques get known. General education cannot be both liberal and modern until this general advance is possible. There are campuses where the student learns in many diverse fields, but what is liberal in his formal experience is still too much rested not upon order but upon randomness.

This situation is all too conspicuous in those church-related colleges and universities which aim at general education based on a spiritual outlook.

One finds instances where the psychology department is avowed behaviorism, the biology teaching is bio-chemical mechanism, history is taught as an unresolved mixture of personal free-will and a blind environmentalism, resembling dialectical materialism and where, therefore, its philosophy department—if it is to give the students a doctrine consistent with the rest of their study—except for formal logic, schools and the like, can only teach neo-confusionism. It is hazardous to challenge the claim that such education is liberal, or produces integrated citizens. The faculty may feel it is united, since it has a central purpose: it allows the student to believe what he likes, and find out some enduring truths, if he can. Is he not then liberated? If the internal disintegration of the faculty is unveiled in discussion, the visitor will be asked what he proposes. If his answer is: "Research into concepts," he may be met with the response that the faculty is too burdened to do such work. This is an economic truth. But he may also be reproached, not with blushing modesty, but for being evasive, since he does not then and there deal out a royal flush of the needed conceptual answers!

A common body of experience is necessary for that cultural interchange; and the body of experience which makes a society possible has to include knowledge at the level at which the society stands in its degree of complexity. The simples of that complex have to be found before they can be taught.

These simples are common to logical and intuitional insight, and the task of identifying them is always essential to the health of the mind, all the more so now because of the state of the world.

We may conclude that a program of significant integrative studies is required on every campus; that no one teaching faculty can devise it, in busy isolation, the scope and labor being immense; and only a special, systematic, and sustained as well as organized effort will serve in a secular democratic educational system to get the knowledge we need to have an education which will not only prompt personal insight, but a large measure of agreement on truths and values, from over-all concepts taught with comprehensive content. We have not heard of the university or college which has been able to abstract the principles, laws, universals, and truths of all forms of exact and correlated science, of art, of philosophy, of religion, and of history and teach them in balanced, interknit form and in terms of consistency. To say that we can give insight and integration without well-organized content, and without groups of teachers who themselves possess insight, is to play with words. A private insight, essential to religion, our society protects and respects, and a few teachers can provoke it in a few students. But this is only a stop-gap for a world-view valid in any classroom. F. L. K.

TOWARD VALID INTEGRATIVE CONCEPTS*

F. S. C. Northrop

This is obviously an extremely difficult task to which we have set ourselves. Nevertheless, I am encouraged to begin it, for I think it is a task which we really can accomplish, because the areas in which the solutions lie are known.

I should like to begin first by giving just a few reasons why the traditional way of handling the problem of integration is inadequate. The fundamental fact of our day is the release of atomic energy, and because of this fact, natural science can no longer ignore the social sciences and the humanities. Politicians, military leaders and foreign ministers must of necessity take scientific knowledge into consideration in an atomic age, and this means, in turn, that the natural scientist will no longer be left free to pursue his investigations and spread them publicly, for they have become dangerous from the standpoint of international relations and military policy. The natural scientist will thus find himself confronted with politicians and military leaders who tell him whether or not he will be permitted to publish his discoveries, and this circumstance will force him to deal with issues in the social sciences. Conversely, the social scientist can no longer expect to operate with concepts having little to do with natural science, for the release of atomic energy means that if he is to say anything significant for the guidance of statesmen, legislators and military men he must take cognizance of the knowledge gained recently in natural science. Knowledge of social science must be enlarged and implemented by an understanding of the cultural background essential to further the scientific investigations required if the nation is to hold its own in international relations. This obvious need of links between the natural and social sciences is the first point I wish to make.

The second point of importance, it seems to me, concerns the reasons for the horrible dilemma we find ourselves in today. Why is it that our students, and indeed all of us, are presented with a great deal of information in many different

fields—literature, social science, economics, political science, theology, moral philosophy, biology, chemistry, physics, astronomy, etc.—without any knowledge of how to put it all together?

We can best become aware of our problem, perhaps, through a mathematical analogy. It is as though a mathematician were presented with a fifth and a seventh, and were asked to put them together without knowing how to reduce the fractions to a common denominator of 35ths. We are all in much the same position as that. A college student, for example, takes a course in literature, in which the meaning of life is given in terms of certain concepts. Then he goes to chapel or church or synagogue and is given other concepts, such as the soul, the spirit and immortality. However, on the following morning, in his class in psychology, he is told just the opposite: that the soul is an outmoded concept, and that stimuli and response and conditioned reflexes are most important keys to an understanding of man. The student has no way of knowing how he is to relate the concepts that he has been given in chapel to those in his psychology, biology and physics courses—to say nothing of what happens when he comes to economics, where the concepts taught him seem to have no relation to electrons, conditioned reflexes or, least of all, to the soul and its immortality. Thus the hapless student is in the position of being confronted with the task of putting together psychological fifths, biological sevenths, theological thirteenthths, and so on, without any clues as to the common denominator necessary to relate them.

It seems to me that there is one major factor which has helped create this confusion, and that



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*Report of an informal address opening a conference of scholars and educators December 4th, 1948. For an account of this meeting the reader may consult the last preceding issue of MAIN CURRENTS.

is a false conception of scientific method as purely inductive and applicable only to restricted, departmentalized fields that have no relation to other departments. Thus we suffer from a depressive disease in which every department of knowledge becomes merely a local and provincial science. This state of affairs is even more apparent in the humanities than in the sciences, for no biologist today would pretend that biological concepts have no connection with chemistry on the one hand or psychology on the other, and the same correspondences are evident to the psychologist. Within the humanities, however, literature is studied without concern for its relationship with other arts, and for the sake of its own particular form and concepts only. In this way the arts, and indeed every department of knowledge, are treated definitively as science. Thus, while the professors of literature are frequently loud in damning science, they have in fact turned themselves into Baconian scientists, in that they have taken literature as an end in itself, whose concepts are remote from philosophy or science. It is in this compartmentalization of knowledge that our students are trained, and we ourselves, in later life, often continue to pursue this method.

The problem before us, then, if we are to get out of this dilemma and recover from this disease, is that of finding the needed common denominator. This difficulty is peculiar to the culture in which we are living, and perhaps it is more acute in the United States than anywhere else. The French today are indeed demoralized, but they know intellectually the causes of their condition, and thus they are not incapacitated as we are, who do not think ourselves demoralized yet cannot understand why we find ourselves in this difficult position.

Let me point out how serious the situation is today with respect to this demoralization, which is, I believe, far worse than we realize. Let us take France as an example, because our own country is in one sense not a fair case, since in some ways we are not so thoroughly embroiled in the world's chaos. At least we still have a government that can function, for a majority of our people are still able to find political leaders with a political program that they can agree upon. Without that, democracy fails. The situation in France shows how dangerous it is for a democracy to have more than two political parties. France today has a socialist group in the middle, representing 40% of the voters, a 30% de Gaullist right, and a 28% Communist left. Thus anyone elected, no matter of what party, will be faced with an opposition of 60% at best and 70% at worst. Under such circumstances, how can a government function in France? Yet the situation there has elements even worse than this, as was shown when Remadier was asked in the last crisis to form a cabinet. The So-

cialist Party, one might suppose, should be able to form a cabinet more easily than any other French party, because of its larger percentage of popular support. Yet Remadier, the Socialist, turned back his mandate to the President after twenty-four hours, with this statement: "There is no point in any Socialist trying to form a government until Socialists agree on a doctrine." The fact is that the Socialist 40% does not really constitute a single party because they have no agreed economic theory to use in handling the inflation with which the French government is faced. There is clear-cut economic theory for the *laissez-faire* right, and there is an economic theory for the Communist left, but there is no economic theory for the Socialist middle.

I want to emphasize that lack of any middle-of-the-road ideology, which is one of the greatest problems facing democracy today. In China, for instance, they are attempting to put together an oriental and a western civilization, but which West is it to be? Communist, or *laissez-faire*? Is it any wonder that now, when *laissez-faire* is being rejected by every country in the Western world (the Truman election probably constitutes its rejection in the United States), Chiang Kai-shek is failing in China?

We in the United States are still able to find a political program (very nebulously defined) that can capture at least a majority of our people. We are one of the few countries in the world today of which this is true. England perhaps is another, yet no one knows whether England's Socialist government would be able to find an ideology with which to handle an inflation if the U.S.A. should cease to give her support. There is as yet no sign that the present government is successfully achieving a position in which it can carry on economically alone. I emphasize this point to bring out the political dilemma caused by the lack of ideological common denominators.

Let us consider our own culture. In our education we have many departmentalized bits of knowledge, each with its own provincial set of concepts, which neither the students nor the professors know how to relate to each other. We all agree that such fragmentation is very dislocating to our society. Yet the situation in our world is much worse than that. A large number of the major countries—including all Latin America, every oriental country in contact with the West and practically all the European countries except Great Britain and possibly Scandinavia—cannot find a common, even though vaguely defined, ideology such as we have, sufficient to capture majority support and so create a government that can function. So that our problem in education is not merely a local issue, concerned with the relation of our traditional conceptions of economics, politics, literature, theology, and so on. In order to

relate these in any valid sense. we must consider that we live in a world in which many countries have not even progressed so far as we, since they have not found a common set of generally accepted conceptions in those fields in which we have secured general agreement. So much for the seriousness of the situation.

Now we reach the third point, the positive solution. As I stated initially, I believe we do know the answer, or rather, that it lies in known fields. It is on the frontier of contemporary sociology and cultural anthropology, it seems to me, that the clue is to be found.

In this connection, I should like to mention the historical development that has led to the modern conception of sociology, which is in considerable part due to the work of two people who are in this group tonight. The traditional sociology of the 19th century was excessively Baconian. The theory held was that by merely observing different cultures and peoples in various parts of the world their salient characteristics would emerge, together with a conception of social science as a whole. This theory, however, overlooked the fact that in observation we not only observe what we see but also describe what we observe. As soon as this second operation begins we are involved with concepts; we no longer have pure fact, but theory. 19th century sociology was too naive about the concepts it used, and so tended to describe the facts of different cultures in terms of the concepts of Spencer or Comte or Sumner or Keller. Thus instead of trying to understand different societies in terms of their own conception of their experience, we tended to view them in terms of the concepts of 19th century Western sociology. However, the longer social scientists studied cultures, the more it came home to them that no observed society can be understood or evaluated until its concepts—its common denominators—are found in the terms in which the people themselves conceptualize their experience, and from the standpoint of which they constructed their social and cultural institutions. It is in this changed view that the solution to our problem is to be found.

One of the first persons to put his finger on this solution was Professor Sorokin, when he made the point that there is a difference between a sociological society and a biological society. Looked at purely biologically, society is the product of the genetic constitution of the individuals in it, plus the responses of those individuals to outward stimuli from other individuals and from nature. Professor Sorokin pointed out that in sociological organization, however, causality is not mechanical but rather what he called logico-meaningful. If we take a given society, such as the Chinese, and introduce a certain stimulus, such as Western law, the effect will not be at all the same as in a Western type of society. In a cultural society, causality

is determined by the concepts which the people in that society use to provide the common denominator terms for relating their literature, their religion, their conception of nature, their economic organization, their political science and their law. Such terms determine the interrelation of factors within the culture, and until an observer has stayed with that society long enough to find those key common denominator concepts, expressed in conceptual terms which embody the experience of its people, it is impossible for him to understand what he has observed. Otherwise he only sees the society externally from his own alien point of view.

Levy-Brühl has been interpreted as stating that there is a fundamental difference between primitive people and the people of so-called sophisticated societies of our own time, in that primitive people did not think logically. This theory has since been completely repudiated by social anthropologists and cultural sociologists for the reason I have just given: that it is impossible to judge them according to our own concepts. Whenever we have regarded primitives as illogical, it was because we were looking at their behavior from our standpoint, rather than from theirs. When, however, such a people are studied long enough to give one the key common denominator concepts which they themselves used to conceptualize their experience into a meaningful whole, then their behavior is seen to be just as logical as our own.

This brings us to the question, what is it that specifies the common denominators of a whole culture in terms of which it falls into focus as a coherent and integrated entity? It is always a philosophy. Philosophy is really nothing but the name for the common denominator integrative concepts in a given culture.

Certain cultural anthropologists have come to the same conclusion. In his study of the Navajo Indians, Professor Kluckhohn has come to the same point that Professor Sorokin emphasized with his notion of social causality as logico-meaningful, by showing that it is impossible to understand the Navajo Indian without first understanding his philosophy. As Professor Kluckhohn has expressed it, every given culture has certain primitive ideas and postulates, and these are the integrating factors in that culture. Similarly, the first step toward integration for education in our culture is concerned with the problem of arriving at our own primitive concepts and postulates.

There is, however, a second step that is necessary. Professor Sorokin and Professor Kluckhohn are social scientists. They did not begin their work with the notion that these studies would lead them to natural science. Yet after a given society has been studied, and its key concepts determined, the question of why these particular people con-

ceptualized their experience in those particular terms inevitably arises.

It seems difficult to believe that humanistic facts are the source of those concepts. Instead, the humanities and the social institutions of a given society are the outgrowth and result of the primitive concepts of their culture. So we cannot look to the humanities to give us the criterion of the key concepts, the philosophy and the values of different societies.

Where, then, do the basic integrative concepts originate? It now appears that the answer is to be found by going back to the sages of the culture under study, whose utterances articulate its philosophical basis. We have been making a study with respect to Chinese law and Roman law. These two systems of law are fundamentally different, even diametrically opposed, so much so that what is good in one tends to be evil in the other. Yet both are based on the fundamental philosophy of the culture. The traditional philosophy of the Chinese classic defines the good for Chinese law, which is based on Confucianism. Likewise, Roman law was formulated by Stoic philosophers and was based upon Stoic philosophy. Now, both the founders of Confucianism and of Stoicism assert their respective philosophy of culture to be true because the source of its verification is *nature*, not *culture*. This is expressed in Roman law in the dictum that *jus gentium*, the humanistic law that defines the good integration of man in culture, is grounded in *jus natura*, the law or philosophy which is scientifically verified for nature. In short, the philosophy of the good, for humanity, is the philosophy of the true, for nature.

Cultures vary, and men vary. Aristotle in his time studied 158 different constitutions, and from this concluded, quite correctly, that there were 158 different justices, yet he believed, also quite correctly, in an absolute justice. In other words, men live in different cultures, which may be of infinite variety, but all people are members of the same nature and inhabit the same planet, the same astronomical universe. Thus, our contemporary anthropology, sociology and philosophy of culture are leading us through the necessary step of recognizing that one can never understand a given society (and this is just as true of our own as of any other) without first discovering the basic concepts and assumptions in terms of which that people conceptualize their experience, to a second important discovery—the discovery, namely, that the verification of the basic integrative philosophical concepts of a culture is to be found in the facts of nature known at the time the sages of the culture first articulated its philosophy.

This shows us how to integrate the humanities and the natural sciences. The basic concepts which define the good for the former must also define the true for the latter.

Thus we come to the second important key to the solution of our educational problem. To integrate our knowledge, we must find these common denominator concepts. We might then ask ourselves, with regard to our own culture, why were these particular concepts derived, rather than others? The answer seems to be that the facts of nature as we have experienced them led to this conceptualization. This gives us a clue to the integration of the humanities and the natural sciences. In a properly integrated culture, whether it be oriental or western, the humanities are not independent sciences but simply the philosophy of nature applied to human relations. The good society is one in which economic and political institutions, legal norms, art and religion are simply forms made for enabling men to relate themselves to one another and to their universe in accord with what true, empirically verified knowledge of themselves and their universe reveals them and that universe to be.

When this position is taken, we immediately reach two conclusions, as stated previously. First, in order to integrate education or culture we must find common denominator concepts, the name for which is philosophy. Second, in seeking to determine why those particular concepts have arisen, we are inescapably brought to the conclusion that it is because natural science has led us to them. As the Stoics put it, philosophy falls into three parts: logic, physics and ethics. Logic is the study of the scientific methods by means of which man knows things. Physics (and this meant all natural science) is the determination of the nature of those things by the scientific methods specified by logic. Ethics, which includes politics, art and religion, is the application to human relations of this knowledge of things gained in natural science by the scientific methods specified by logic. Thus ethics is just like engineering. The only difference is that in engineering natural science is applied to inorganic matter, and in the humanities, the philosophy of natural science is applied to relations between natural objects, which are human beings. It is interesting that the Stoic philosophers claim that on this point the Aristotelians, the Platonists and the strict Stoics, the followers of Zeno, were in agreement. For the Stoics (and for the Greeks) engineering ranked higher than the fine arts because engineering enabled men to meet their needs, whereas the fine arts often did little more than tickle their pleasures.

This brings us to another point, which was raised last year in a seminar we held in the philosophy of law. If the norms for law are verified against nature in both the oriental Chinese case and in the western Stoic case, why are laws diametrically opposed in their norms? For example, in Chinese law it is immoral to bring a concrete legal dispute under a general rule, whereas in the

west, no judge feels he is rendering justice unless he finds the major premise under which to bring the concrete instance. The answer to this problem seems to be, as I outlined in *The Meeting of East and West*, that the Chinese know nature purely inductively, as immediately apprehended sensed and felt nature. All immediate events are relative to the time and circumstances in which they are seen. If this is the only genuine knowledge, then every case is a particular, and it is falsified if treated as a universal. Existentialism today holds exactly this thesis. On the other hand, the Roman idea that morality is dependent upon adherence to a general rule was based upon Greek science. The Greeks found a new way of knowing man and nature by the methods of hypothesis and deductively formulated theory, in which every fact is seen as an instance of a universal rule. When it becomes clear through study that both these two ways of knowing nature are valid, we get a glimpse of a set of concepts for integrating our knowledge that can pull oriental and western culture together.

Unfortunately when we compare the different cultures of the world, or even the culture of the Navajo Indians in this country with that of our own, we find that the philosophical concepts are not merely different but on certain points incom-

patible, and thus all codes on these concepts are also incompatible. This has tragic consequences, as Dr. Kluckhohn has brought out in connection with our treatment of the Navajos, for it tends to produce a group of people who fall morally between the codes of both cultures. Our final problem will be to get these different integrative concepts of the major cultures of the world out into the open. We have to face the fact that when they are contradictory, the solution can be achieved only by establishing a new set of concepts which will take care of the facts without contradiction.

Thus, if we follow what seems to be the road indicated to us by contemporary cultural anthropology, sociology and the philosophy of culture in its relation to the philosophy of natural science, we shall get the key to the technique for integrating apparently incommensurable departments of knowledge, not merely of our own culture, but of all the cultures of the world. The different integrative basic philosophic concepts of the different nations and cultures of the world must be determined and, insofar as they are compatible, combined. Then the world philosophy of the humanities must be enriched and reformed to bring it into accord with the more fertile basic integrative concepts of the philosophy of nature prescribed by the empirically and experimentally verified natural science of the Twentieth Century.

OUR THREE NEEDS*

Albert Schweitzer

... the period in which we are living altogether misses the significance of having a theory of the universe. It is the common conviction nowadays, of educated and uneducated alike, that humanity will progress quite satisfactorily without any theory of the universe at all.

The real fact is that all human progress depends on progress in its theory of the universe, whilst, conversely, decadence is conditioned by a similar decadence in this theory. Our loss of real civilization is due to our lack of a theory of the universe.

Only as we again succeed in attaining a strong and worthy theory of the universe, and find in it strong and worthy convictions, shall we again become capable of producing a new civilization. It is this apparently abstract and paradoxical truth of which I proclaim myself the champion.

Civilization, put quite simply, consists in our giving ourselves, as human beings, to the effort to attain the perfecting of the human race and the actualization of progress of every sort in the circumstances of humanity and of the objective world. This mental attitude, however, involves a double predisposition: firstly, we must be prepared to act affirmatively toward the world and life; secondly, we must become ethical.

Only when we are able to attribute a real meaning to the world and to life shall we be able also to give ourselves to such action as will produce results of real value. As long as we look on our existence in the world as meaningless, there is no point whatever in desiring to effect anything in the world. We become workers for that universal spiritual and material progress which we

*Extracted from pages vii to xi of *The Decay and The Restoration of Civilization*, by Albert Schweitzer, with the kind permission of the publishers, The Macmillan Co.

call civilization only in so far as we affirm that the world and life possess some sort of meaning, or, which is the same thing, only in so far as we think optimistically.

Civilization originates when men become inspired by a strong and clear determination to attain progress, and consecrate themselves, as a result of this determination, to the service of life and of the world. It is only in ethics that we can find the driving force for such action, transcending, as it does, the limits of our own existence.

Nothing of real value in the world is ever accomplished without enthusiasm and self-sacrifice.

But it is impossible to convince men of the truth of world- and life-affirmation and of the real value of ethics by mere declamation. The affirmative and ethical mentality which characterizes these beliefs must originate in man himself as the result of an inner spiritual relation to the world. Only then will they accompany him as strong, clear, and constant convictions, and condition his every thought and action.

To put it in another way: world- and life-affirmation must be the products of thought about the world and life. Only as the majority of individuals attain to this result of thought and continue under its influence will a true and enduring civilization make progress in the world. Should the mental disposition towards world- and life-affirmation and towards ethics begin to wane, or become dim and obscured, we shall be incapable of working for true civilization, nay, more, we shall be unable even to form a correct concept of what such civilization ought to be.

And this is the fate which has befallen us. We are bereft of any theory of the universe. Therefore, instead of being inspired by a profound and powerful spirit of affirmation of the world and of life, we allow ourselves, both as individuals and as nations, to be driven hither and thither

by a type of such affirmation which is both confused and superficial. Instead of adopting a determined ethical attitude, we exist in an atmosphere of mere ethical phrases or declare ourselves ethical sceptics.

How is it that we have got into this state? It is because hitherto the world- and life-affirming and ethical theory of the universe had no convincing and permanent foundation in thought. We (thought again and again that we had found such a basis for it; but it lost power again and again without our being aware that it was doing so, until, finally, we have been obliged, for more than a generation past, to resign ourselves more and more to a complete lack of any world-theory at all.

Thus, in this introductory part of my work, I proclaim two truths and conclude with a great note of interrogation. The truths are the following: The basic ethical character of civilization, and the connection between civilization and our theories of the universe. The question with which I conclude is this: Is it at all possible to find a real and permanent foundation in thought for a theory of the universe which shall be both ethical and affirmative of the world and of life?

The future of civilization depends on our overcoming the meaninglessness and hopelessness which characterize the thoughts and convictions of men today, and reaching a state of fresh hope and fresh determination. We shall be capable of this, however, only when the majority of individuals discover for themselves both an ethic and a profound and steadfast attitude of world- and life-affirmation, in a theory of the universe at once convincing and based on reflection.

Without such a general spiritual experience there is no possibility of holding our world back from the ruin and disintegration towards which it is being hastened. It is our duty then to rouse ourselves to fresh reflection about the world and life.

A SCIENTIFIC APPROACH TO RELIGION

J. B. Rhine

Religion, every form of it, has a foundation of what is regarded as truth. Without this truth-acceptance there could be no religion as we think of the term. This body of accepted doctrines va-

ries widely in its content from one religion to another, though there are some elements common to all religions. This doctrine also changes greatly in the course of time within a given religion. Such differences and changes are likewise found among individuals.

Religion, everyone's experience of it, depends upon the degree of acceptance he can give to this basic doctrine, in a word, upon his conviction of the reliability. The more certain one feels about the truth of his religion, the more he responds to it and the more profoundly it influences his life.

With all this so far there can be no disagreement. It is, in fact, almost obvious.

It is therefore of the greatest importance to religion that its doctrine be as reliable as possible; or that its soundness be ascertained and that only the more valid portions be retained. Since intelligent acceptance and conviction are so plainly vital to the function of religion, it follows that for intelligent people the way to advance religion is to improve its foundations, to make its truth more compelling, its claim to factuality inescapable.

The urge to improve the factual foundations of religion ought therefore to appeal strongly to all those who want to increase the stability and effectiveness of religion for human society. The desire to find out more about the great questions raised by religions is not only in line with the spirit of inquiry and growth we encourage in every other field of thought, but it is in harmony with the greatest of the religious teachers themselves. Had Jesus been backward looking and orthodox, we should not have the great spiritual insights of Christianity. Had not the Buddha been a religious progressive, an inquirer, he would never have challenged the stagnant conventions of his day. Beyond question the greatest fact we get from the history of religion is the fact that such progress as has been made has come about through the challenging of authoritarian dogma, defiance of conservative leadership, and the discovery of a more useful basis for spiritual guidance.

We can see, if we look at history, what has happened as men have learned to make sure about their facts. Jesus, like every religious leader in his time, was a healer. As the more reliable ways of getting at the truth came into use in treating disease, effectiveness in healing greatly advanced. Today we call medicine a science, meaning only that it really knows what it is doing. The Master was also a great counsellor. No one questions, however, the wisdom of advancing our inquiries in psychology so as to make the professional counsellor of today as fully informed and expert as he can be. What man of education, then, free to speak his own mind, would say that we should not advance our knowledge likewise in the other realms with which our religious leaders of the past have dealt? Is not advancement in the area of religious truth far more important than any other by reason of its central relation to society? We must all, I think, regard it so.

We have been held back in religion, however, by some very grave misconceptions. Those who have wished their religion to remain static—and there are always such conservatives in every human organization—have tried to tell us that the questions of religion are beyond the reach of study and of being answered by the mind of man. Some will even say it is wicked to doubt the finality of the answers already given and to try to learn

anything more about our place in the universe. They forget that all progress—in religion and out of it—begins with dissatisfaction with the way things are.

The worst misconception of all is that of thinking that the ways of getting reliable knowledge in other fields, i. e., scientific method, could not be used in testing the basic truth of religion. In part this error comes from thinking of science as being like the more familiar branches, the physical and biological sciences. Quite obviously the techniques of these fields could not deal with religious problems. But there is also a mistaken fear of science as an enemy of religion, as a result of the conflict of geological and biological findings with the older Christian cosmology. In nearly every field, however, this same fear of inquiry was experienced in its first advances.

While these misconceptions have been successfully blocking advance in religious inquiry, the rapid spread of scientific ways of thinking has been forcing a lopsided scientific picture of man upon the world, and religion has been losing out among well-educated people.

At the same time a tiny group of unrecognized and unsupported scholars has been investigating the exceptional manifestations of the human mind, those that suggest transcendent properties such as religious doctrine has always assumed. By the objective methods of experimental research they have verified such claims as that of an extraphysical aspect in man, a sort of soul theory in the germ. The verification of a human factor that does not fit into the familiar time-space mass system of physics is of great importance to the factual foundations of religion.

What should be of greater significance, however, than the findings themselves, is the fact that this research is an illustration of the kind of exploration that can be used over the whole field of major problems that religion commands. In the branch of study that we call parapsychology, we have plans already for further invasions of the problem-area of religion, and there will likely be no stopping point. In other words, we already have a laboratory for research on the foundations of religion, be it ever so humble and so handicapped.

The idea is not at all a new one. A century ago Tennyson said: "Faith were as science then, were she but to arm herself with the instruments of her time." That is to say, religion could very well hold her own if she would advance like the other branches of science. Early in the century William James suggested a science of religions. He also predicted that the most important contributions to science would probably come in the area we now call parapsychology. I suspect that these two thoughts were very closely related in his thinking.

THE ORIGIN AND NATURE OF SOCIAL LIFE AND THE BIOLOGICAL BASIS OF COOPERATION*

M. F. Ashley Montagu

The findings and ideas which I should like to discuss with you this evening have emerged from an inquiry calculated to throw some light upon the manner in which the hominid organism is turned into a social human being. For the purposes of this study it was necessary to inquire into the nature of social life in unicellular as well as in multicellular organisms. At the outset of the inquiry I had no idea where it would lead me, and the somewhat dramatic and altogether unexpected results have helped me, as I hope they may help you, to a new understanding of the meaning of love, of man, and religion. These findings provide us with a biological basis for religion and the living of the good life. Their consequences for personal, group, national, and international relations can hardly be exaggerated.

While definitions are meaningful at the end rather than at the beginning of a discussion, it may be of assistance at this point to say that by *social* we generally mean all those interactions between persons or groups in which needs are satisfied, a need being understood as any desire of the organism. By *cultural* is meant the particular form or way of life which characterizes the social activities of a group. By *life* is meant that condition in which a body exhibits the functions of *irritability* (response to stimuli), *motility* (movement), and *reproductivity* (multiplication). An *organism* is that organization of *interactive* elements which displays the functions of life in a self-consistent manner.

*A lecture delivered before the Rochester Academy of Sciences, New York, April 15, 1948 and here published with the kind permission of the author and also that of the Editor of the *Journal of Social Psychology*, where the report appears in the May 1949 number, Vol. 29, second half.

This survey identifies the subject *symbiosis* which, under Dr. Montagu's direction, will be pursued in a sustained integrative study, one of several such projects authorized by the Research Co-ordinating Board of the Foundation for Integrated Education.

It is a fairly well established view that in the early stages of life upon this earth the only forms of life were represented by single-celled plant and animal organisms. In all such forms of life the single cell is a complete and self-supporting organism, which performs all the necessary vital functions for itself by means of the differentiated parts of its protoplasmic body. The amoeba and paramecium are the most familiar examples of such unicellular organisms, which always originate from a parent cell. In this fact, at this early stage, may be perceived the fundamental ground of social life, in the origin of one cell from another, in the relation of a daughter cell to the parent cell in the process of budding off or cleavage.

In amoeba, reproduction is effected by simple fission of the parent body into two single cells; the plant cell *haematococcus* (which occurs in temporary pools of stagnant rain-water, or in the resting condition in dried up mud or dust) multiplies itself by simple fission within the old cell wall, this process almost immediately resulting in the production of four new individuals (the same thing may happen in amoeba). Sometimes, however, another method of multiplication occurs in *haematococcus*. Instead of dividing into four relatively large zoospores, a restive individual may divide into thirty-two or sixty-four much smaller microzooids which differ from the ordinary active form in the absence of the characteristic cell wall and its underlying vacuole.

The microzooids freely swim about by means of their flagella and sooner or later they come together in pairs, the members of each pair fusing with one another to form a single individual. This is an excellent illustration of sexual reproduction, the essential feature of which is the union of two sexual cells or gametes (in this case the microzooids) to form a single cell, the zygote, which is the starting point of a fresh series of cell generations.

Whether reproduction or multiplication is secured by fission or by conjugation of gametes, the process is always an interacting one between parent and developing new organism. The parent organism supplies the vital tissues to the new organism and in the process of fission there are metabolic and other physiologic exchanges before parent and daughter cell become organically independent of each other. This type of relationship in varying degrees is characteristic of all plant and animal life.

It is here suggested that the fundamentally social nature of all living things has its origin in this physiological relationship between parent and offspring; in the fact that the two are for a time

bound together in an interactive association; in the fact that the life of either one or the other is at some time dependent upon the potential or actual being of the other. Thus, for example, when the amoeba has reached a certain size it can only avoid death by dividing, and this it does. The new organism is, at least during the period of division, entirely dependent upon the proper functioning of its parent. In this dependency, brief as it may appear to our senses, we may perceive the origins of infant dependency in the higher animals and the very obvious social and, particularly in man, cultural consequences of that dependent relationship. In short, the universal fact of reproduction and all that that implies is the foundation of the social relationship which characterizes all living organisms. Where the offspring are born in a helpless condition and their postnatal care is more or less extended we have a setting for the development of more complex forms of social life. As we have said, it is in the nature of the reproductive process that we see the basis for the development of social life, and the suggestion is that social life represents the response to organic drives, the expression of functions which are inextricably a part of the life of the organism. The universality of social life would seem to indicate as much.

No living organism is either solitary in its origin or solitary in its life. Every organism from the lowest to the highest is normally engaged in some sort of social life. The solitary animal is, in any species, an abnormal creature.

If the origin of social life owes its existence to the organic drives arising from and determined by the reproductive relationship, it is of more than passing interest to note that physically the multicellular organisms owe their origin to the same processes; that originally separate cells developed the habit of remaining attached together after division, as the spores in the encysted envelope of the parent amoeba might do to form a multicellular organism. Such an aggregation of cells would provide the means for the development of the multicellular higher animals. Such interactive cells would, by their increasing ability to cooperate, develop specialized functions, and increasingly complex relations. The multicellular organism is therefore to be regarded as the expression of increasing intercellular cooperation, in which the interdependent cooperating activities of its cellular masses function together, so that at all times the organism is able to function as a unit and as a whole.

With the development of this interpretation of the facts we reach the view that the organism is, in fact, a species of society. Every word in Cooley's definition of society, for example, can be applied to the definition of an organism. "Society is a complex of forms or processes each of which is

living and growing by interaction with the others, the whole being so unified that what takes place in one part affects all the rest. It is a vast tissue of reciprocal activity, differentiated into innumerable systems, some of them quite distinct, others not readily traceable, and all interwoven to such a degree that you see different systems according to the point of view you take."¹

The system which a multicellular organism constitutes can also be so defined. But there is much more to human society than is stated in Cooley's definition, though that definition will do as a description of society in general. It will not do as a definition of human society in particular because it omits any explicit reference to the fact that human society represents a development of mind, of interactive consciousnesses and the complex of relationships to which these give rise, in a sense quite different from that which might be conceived as possessed by the individual or masses of cells which are the interactive elements which constitute the organism. The units constituting human society are free, those constituting the organism are, for the most part, fixed. The greater part of a society can be destroyed without causing the death of its remaining units, whereas under similar conditions death would generally (though not always) follow in organisms. A person in human society exercises his free will and his independent being in thought, feeling, and action. This is not the case with regard to the cells which make up the organism. All this is not to say that there is no relation between the society of the organism and human society, but simply that there is a very real difference between the two forms of society, and that one must not be identified or confused with the other. The organismal analogy as applied to human society is quite false, but the relationship of the behavior of the cells which in interaction constitute the organism and human society is a phylogenetic one, and this is far from being false.

Whatever the nature of the factors involved in the cooperation of cells cohering to form functioning many-celled organisms, such cooperation does exhibit the elements of a social act, and it would seem clear that such acts originally represent the expression of a drive which has its origin in the reproductive-dependency relationship of parent cell and daughter cell, and that the tendency of living things to form societies is coeval with life itself. Finally, that human society represents the culmination of this tendency, and that in virtue of what seems to be the accident of the development of man's remarkable psychical powers, his great plasticity, and freedom from biologically predetermined forms of behavior, human

¹Charles H. Cooley, *The Social Process*, Scribners, New York, 1918, p. 28.

society has assumed a unique form, it has become highly culturalized.

The fact that such diverse groups as insects and mammals have developed social life indicates beyond any reasonable doubt the existence in organic life of deep-seated potentialities toward socialization, or rather what might be more properly called "societization," the process of forming society.

Allee² has presented the evidence which shows that among the simpler plants and animals there exists a sort of unconscious cooperation of automatic mutualism. This is primarily reflected in their tendency to aggregate together, while the biological benefits which follow from their activities is exhibited in the significantly greater survival rate of organisms living in fairly dense populations than those living in sparse populations or in an environment in which they are isolated. Varying with the nature of the environment the isolated animal will, in general, be retarded in growth or irremediably damaged or suffer death, where the animal living in association with others will increase in size and in the spread of its physiological reactions, tend to recover quickly from wounds, and survive more often where the solitary animal would die. Thus, planarian worms which have been exposed to ultraviolet radiation disintegrate more rapidly when isolated than when they are together with other worms. They survive exposure to ultraviolet radiation better when crowded while being radiated, and there is a much higher death rate among those which are isolated a few minutes after irradiation than among those which are left together. Goldfish placed together in groups of ten in a suspension of colloidal silver survived much longer than those which were placed in similar suspensions alone. Allee writes, "When exposed to the toxic colloidal silver the grouped fish shared between them a dose easily fatal for any one of them; the slime they secreted changed much of the silver into a less toxic form. In the experiment as set up the suspension was somewhat too strong for any to survive; with a weaker suspension some or all of the grouped animals would have lived; as it was, the group gained for its members a longer life. In nature they could have had many more minutes for rain to have diluted the water or some other disturbance to have cleared up the poison and given the fish a chance for complete recovery."³

This experiment illustrates in the case of these goldfish, and presumably holds true for all other

aquatic organisms, the physicochemical basis of the advantage which lies in numbers. Allee's studies on the rate of cleavage of the fertilized egg of the common sea-urchin *Arbacia* show that, with few exceptions, the rate is more rapid in the denser clusters of eggs than in isolated fellow eggs. Protozoons, it had been experimentally shown, grow more rapidly when they are introduced in large numbers into a sterile medium of relatively simple salts than if the cultures are started with only a few organisms. The biological advantages are all in the crowding—not overcrowding—while separation or isolation would appear to be so lethal to the organisms that we can be fairly certain that it never occurs in nature. What an optimal population size for different groups in nature is will depend upon the group and its environment, but thus far the evidence strongly indicates that optimal numbers present in a given situation have certain positive survival values and positively exert stimulating effects on the growth of individuals and the increase of populations (Allee pp. 106-107). Thus, for example, Darling has found that among herring gulls the members of larger colonies stimulate each other to commence sexual activities earlier than when the colonies are smaller, and furthermore, there tends to be a speeding-up of egg-laying, so that breeding activities are more intense while they last. The survival value of the short spread of time between laying and hatching lies in the fact that a greater number of young gulls survive under such conditions than do so where the colony is small and the spread of hatching time therefore longer.⁴

The unconscious kind of mutualism or cooperation which universally exists among lower animals, not commonly regarded as social or viewed only as partially social, undoubtedly represents an earlier stage in the development of social life among the higher animals. It is important to understand in its full implications the fact that this principle of mutualism, of cooperation, is the fundamental principle which appears to have governed the relations of organisms from the very first, and the organic basis for this, the explanation which best fits the facts, would appear to lie in the nature of the reproductive relationship, with the accompanying mutual interrelations which are for a time maintained between parent and developing organism. Whatever of truth there may be in this it is certain that the conception of nature "red in tooth and claw," in which animals are conceived to be in a constant state of warfare with one another, in which the "struggle for existence" and "the survival of the fittest" are the two cardinal principles of "natural selection," is

²Warder C. Allee, *Animal Aggregations*, University of Chicago Press, Chicago, 1931; *The Social Life of Animals*, W. W. Norton, New York 1938.

³*The Social Life of Animals*, pp. 56-57.

⁴E. Fraser Darling, *Bird Flocks and the Breeding Cycle*, Cambridge University Press, New York, 1938.

grossly one-sided and false. Activities which may collectively be called the struggle for existence do characterize the behavior of most animals, but such activities are not all that characterize their behavior, the two forms of behavior complementing rather than being in opposition to one another. In what might be called the tough Darwinian period of the last century the concept of natural selection in its crude form so completely dominated the thought of biologists and Spencerian sociologists—and practically every sociologist was a Spencerian in those days—that the existence of cooperative behavior on a large scale, though known to some biologists and certainly well understood by Darwin, was virtually completely neglected in favor of the quite properly regarded important principle of natural selection. Darwin's great book, published in November 1859, was entitled *The Origin of Species by Means of Natural Selection, or The Preservation of Favoured Races in the Struggle For Life*. And that essentially is what throughout the last forty years of the nineteenth century most biologists were engaged in proving. The voices which were raised in defense of cooperation were drowned out in the din created by the one-sided proponents of natural selection. It was not that the natural selectionists denied the existence of cooperation, but that they passed it by and neglected it in favor of natural selection. The extreme viewpoint of the natural selectionists was stated by that great man T. H. Huxley in 1888 in his "struggle-for-life" manifesto, "The Struggle For Existence and Its Bearing Upon Man" (*Nineteenth Century*, February, 1888). The reply made by Prince Petr Kropotkin in eight articles published between the years 1890 and 1896 in the pages of the *Nineteenth Century*, and in 1902 published in book form as *Mutual Aid a Factor of Evolution*, made and has steadily continued to make a deep impression upon all who read it. It succeeded in drawing attention to substantial works which had already dealt with the subject, and in focussing attention upon an important and much underrated factor in evolution. Giddings in *The Principles of Sociology* (1896) was the first sociologist to emphasize the importance of cooperation in evolution, and among English publicists Henry Drummond, for example, chose for his Boston Lowell Lectures, published in 1894 as *The Ascent of Man*, the exposition of the thesis that while in nature there was indeed a struggle for life there was also such a thing as the struggle for the life of others. A goodly number of works having the same theme for their subject have been published since the beginning of the century.⁵

At the present time the principle of cooperation is in a fair way to becoming established as the most important factor in the survival of animal groups. Summing up the modern point of view Allee says, "After much consideration, it is my mature consideration, contrary to Herbert Spencer, that the cooperative forces are biologically the more important and vital. The balance between the cooperative, altruistic tendencies and those which are disoperative and egoistic is relatively close. Under many conditions the cooperative forces lose. In the long run, however, the group-centered, more altruistic drives are slightly stronger.

"If cooperation had not been the stronger force, the more complicated animals, whether arthropods or vertebrates, could not have evolved from simple ones, and there would have been no men to worry each other with their distressing and biologically foolish wars. While I know of no laboratory experiments that make a direct test of this problem, I have come to this conclusion by studying the implications of many experiments which bear on both sides of the problem and from considering the trends of organic evolution in nature. Despite many known appearances to the contrary, human altruistic drives are as firmly based as is man himself. Our tendencies towards goodness are as innate as our tendencies toward intelligence; we could do well with more of both."⁶

The tendentious habit of thinking of evolution in terms of the struggle for existence, by means of which, it is believed, the fittest are alone selected for survival while the weakest are ruthlessly condemned to extinction, is not only an incorrect view of the facts, but is a habit of thought which has done a considerable amount of harm.

of Cooperation; A Study in Bioeconomics, Kegan Paul, 1913, and *Symbiosis, A Socio-Physiological Study of Evolution*, Headley Brothers, 1920; William M. Wheeler, *Social Life Among Insects*, Harcourt, Brace & Co., New York, 1923; and "Social Evolution," in *Human Biology and Racial Welfare* (Edited by Edmund V. Cowdry), Hoeber, New York, 1930; John M. Macfarlane, *The Causes and Course of Organic Evolution*, Macmillan, New York, 1918; William Patten, *The Grand Strategy of Evolution*, Richard B. Badger, Boston, 1920; Warder C. Allee, *Animal Aggregations*, University of Chicago Press, Chicago, 1931, and *The Social Life of Animals*, W. W. Norton, New York, 1938, also "Where Angels Fear to Tread: A Contribution From General Sociology to Human Ethics," *Science*, vol. 97, 1943, pp. 518-525; Charles Sherrington, *Man on His Nature*, Cambridge University Press, New York, 1941; Alfred E. Emerson, "Basic Comparisons of Human and Insect Societies," in *Biological Symposia*, vol. 8, 1942, pp. 163-177, and "The Biological Basis of Social Cooperation," *Illinois Academy of Science Transactions*, vol. 39, 1946, pp. 9-18; R. Gerard, "Higher Levels of Integration," in *Biological Symposia*, vol. 8, 1942, pp. 67-87; Ralph S. Lillie, *General Biology and Philosophy of Organism*, University of Chicago Press, Chicago, 1945; Thomas H. Huxley and Julian Huxley, *Touchstone For Ethics*, Harper & Brothers, New York, 1947; Samuel J. Holmes, *Life and Morals*, Macmillan, New York, 1948.

⁶Warder C. Allee, "Where Angels Fear to Tread: A Contribution From General Sociology to Human Ethics," *Science*, vol. 97, 1943, pp. 518-525, p. 521.

⁵Yves Delage and Marie Goldsmith, *The Theories of Evolution*, Huebsch, New York, 1912; Hermann Reinheimer, *Evolution*

Only by omitting any reference to such an important evolutionary force as the principle of cooperation, and by viewing evolution as a process of continuous conflict between all living things, can man be led to conclude that survival or development depends on successful aggression. Omitting important facts and basing their arguments on false premises the tough Darwinians could only arrive at false conclusions. As Allee says, "Today, as in Darwin's time, the average biologist apparently still thinks of a natural selection which acts primarily on egoistic principles, and intelligent fellow thinkers in other disciplines, together with the much-cited man-in-the-street, cannot be blamed for taking the same point of view."⁷

Certainly aggressiveness exists in nature, but there is also a healthy non-ruthless competition, and there also exist very strong drives toward social and cooperative behavior. These forces do not operate independently but together, as a whole, and the evidence strongly indicates that of all these drives the principle of cooperation is the most dominant, and biologically the most important. The co-existence of so many different species of animals throughout the world is a sufficient testimony to the importance of that principle. It is probable that man owes more to the operation of this principle than to any other in his own biological and social evolution. Indeed, without this principle of cooperation, of sociability and mutual aid, the progress of organic life, the improvement of the organism, and the strengthening of the species, become utterly incomprehensible.

We may, by induction from the facts, arrive at a generalization or law to the effect that the greater the cooperative behavior exhibited by the members of any group the more thoroughly socially organized is that group likely to be. An interesting example of this law is provided by the social ants in which the principle of cooperation has been developed to the limit of fixity. But, as Schneirla has suggested, it were perhaps more accurate to speak of *bio-social facilitation* rather than of cooperation here because of the psychological limitations of social ants.⁸ The distinction is, however, simply one of organization at qualitatively different levels. The principle of cooperation has been resumed by a group of distinguished biologists in the statement that the probability of survival of individual or living things increases with the degree in which they harmoniously adjust themselves to each other and to their environment,⁹ while A. E. Emerson has concluded that the dominant directional trend in evolution is to-

ward a controlled balance of the important factors within the system. "Human society cooperatively brings the social environment under control for the better survival of the species."¹⁰

If we would seek for one word which describes society or the social better than any other, that word is cooperation. The important point to grasp here is that contrary to the beliefs of the struggle-for-survival school of thought man does not have to create a cooperative mood for himself to erect over the tufa of his savage strivings to be otherwise. Not at all. The impulses towards cooperative behavior are already present in him at birth, and all they require is cultivation. As for any other kind of strivings the infant of most vertebrates is equipped with the ability to compete with the universe for attention, and it generally succeeds in eliciting cooperative behavior, usually from one or both parents. In the process of socialization a certain quantity of the energies of aggressiveness are transformed into cooperative processes. The reproductive process is a cooperative one, and in addition development as one of a litter or group of siblings represents another early experience in the development of cooperation; development within a family represents a still further experience in the learning and practice of cooperation.

To summarize briefly the points we have arrived at thus far: Firstly, some sort of social life is present in even the lowest organisms, and such a thing as a completely asocial variety of animal probably does not exist. Secondly, social life confers distinct advantages, biological and social, upon the animals participating in it. Thirdly, the dominant principle of social life is not the struggle for existence but cooperation is. Fourthly, the evidence indicates that some form of social life is probably coeval with life itself, otherwise it could not have become established. Fifthly, the organic basis of social behavior is to be found in the nature of the reproductive relationship between parents and offspring.

Consider the reproductive process and all that it implies. Reproduction is based on interaction and interrelationships of an interdependent kind, and these determine the pattern of dependency of one organism upon another. Furthermore, continuity of substance and physiological function is thus established between parent and offspring, and this implies the continuity of all living things. Our kinship is with the whole world of life. That kinship demands that we will fulfill our natural obligation to our more lowly relations in sympathy and understanding, recognizing that we are all of the same remote origin, merely different forms of the same world-stuff.

⁷Ibid., p. 520.

⁸T. C. Schneirla, "Problems in the Biopsychology of Social Organization," *Journal of Abnormal and Social Psychology*, vol. 41, 1946, pp. 385-402.

⁹C. Leake, "Ethicogenesis," *Proceedings of the Philosophical Society of Texas*, vol. 10, 1944, pp. 7-34.

¹⁰A. E. Emerson, "The Biological Basis of Social Cooperation," *Illinois Academy of Science Transactions*, vol. 39, 1946, pp. 9-18.

Is it not a remarkable fact that the reproductive process which is concerned with the reduplication of life itself should constitute the fundamental social relationship? Yet nothing could be more appropriate. The pattern is determined by the fact that the maternal and foetal organisms are for a time bound together in interacting association, and the foetus is entirely *dependent* upon the maternal organism for its sustenance, for the satisfaction of its needs. In utero the process proceeds largely upon the vegetative level. But at birth the dependent relationship becomes more active and complex, both on the part of the newborn and the maternal organism or its substitute. The dependency of the newborn is a continuation of the dependency of the foetus, as the dependency of the child and adult is a continuation of the dependency of the infant, a dependency which has its origin in the once inseparable connection between the organism and that other organism out of which it developed.

Dependency may be defined as the relation of the organism to the conditions which support it. In the newborn it is doubtful whether dependency is experienced as anything more than a generalized, diffused tonal state, related to its more specific urges, satisfactions, and dissatisfactions. The generalized dependency state never assumes a definite form in the absence of socializing agents, as is testified by the complete failure of development of personality in isolated children. To be dependent means to rely upon some other organism or organisms for the satisfaction of one's needs. The consciousness of a distinct feeling of dependency cannot be developed in the absence of factors which produce a growing awareness in the infant that practically all his satisfactions are obtained through the responses made to his basic needs by other persons. Such an awareness is, as it were, a precipitate of recurring experiences of unsatisfied cravings which have eventually been satisfied by others, but for whose intervention those cravings would never have been satisfied. The child learns that it is dependent, and the whole of its social training teaches it, in effect, to become more and more dependent. Interdependency is the social state. Non-dependent individuality is the non-social state.

The need for love simply represents the growth of a condition originating in the impulses of the dependency state. These impulses are developed by those who help to give greater form to the dependent state by satisfying the infant's needs. The infant loves those who satisfy its needs. It hates those who fail to satisfy or who frustrate the satisfaction of its needs. In this latter sense one may readily see that hatred is but love frustrated.

The process of caring for the infant consists principally in satisfying its needs. This process represents the commencement of the socialization

of the person, the preparation of the person for participation in the social group. To telescope much into a few words, as the child matures and the socializing process continues, with its frustrations as well as its satisfactions, the child becomes more and more firmly bound to the socializing agent, more and more dependent rather than more free, and this social binding continues throughout life. This view of the development of the person cannot be too strongly emphasized, particularly in a land in which the myth of rugged American individualism still prevails. The conventional view of the person in the socializing process as developing to greater and greater individuality is a seriously misleading one. Of course every person has a unique personality in the sense that it is never identically like that of any other person, and the differences between personalities are important and valuable and tend to become more distinct with age. This is something very much to be thankful for. But it must be realized that every one of these differences has developed under the influence of socializing factors, and that were it not for the creative action of those socializing factors, those functional-structural differences, the pattern of psychic differences which characterizes each person would not exist. The "individual" is a myth. A creature apart from a social group is nothing but an organic being. The member of a social group is a *person*, a personality developed under the moulding influence of social interstimulation. The person is a set of social relationships.

The "rugged American individualist" is no more an individualist than is a soldier sniping at the enemy. Both behave as they do because they have been subordinated to imperatives which in each case are functions of their social conditioning. They act as they do because they are the results of certain historically conditioned social processes. They act as they do, not because they are independent individuals, but because they are dependent persons bound to their social group by ties which cause them to desire to maintain their relationships in that group in the manner, in each case, allowed and encouraged by the group. Free-will the person has and is constantly exercising, but it is a freedom and a will which acts strictly within the limits determined by the pattern of the social group. In short, the person is an interdependent system of social relationships which may by abstraction alone be recognized as a unit, as an individual. As Leo Loeb has remarked in a masterly work, "In consequence of the more and more intricate interaction between environment and psychical-social individuality, a separation between individuality and environment, especially the social environment, becomes impossible."¹¹

¹¹Leo Loeb, *The Biological Basis of Individuality*, C. C. Thomas, Springfield, Illinois 1944, pp. 651-652.

And that is the truth which must forever shatter what I insist on calling the pathetic fallacy, the organismal fallacy, which maintains that man is essentially a function of his genes. The biologically exclusive sacredness of the individual is a chimera not only for man but for all other animal groups. The biology of an earlier day may have cried "the individual for itself." To this the most distinguished of living physiologists, Sir Charles Sherrington, has made the proper reply in one of the great books of our time. "The individual? What are the most successful individuals which Life has to show? The multi-cellular. And what has gone to their making? The multi-cellular organism is in itself a variant from the perennial antagonism of cell and cell. Instead of that eternal antagonism it is making use of relatedness to bind cell to cell for co-operation. The multi-cellular organism stood for a change, in so far, from conflict between cell and cell to harmony between cell and cell. Its coming was, we know now, pregnant with an immense advance for the whole future of life upon the globe. It was potential of the present success of living forms upon the planet. Implicit in it was for one thing the emergence of recognizable mind. It was among the many-celled organisms that recognizable mind first appeared. It is surely more than mere analogy to liken to those small beginnings of multi-cellular life of millions of years ago the slender beginnings of altruism today. Evolution has constantly dealt with the relation between physical and mental as more than mere analogy. The bond of cohesion now arising instead of being as then one of material contact and interchange between related cell lives is in its nature mental. It is a projection of the self by sympathy with other life into organismal situations besides its immediate own. It is altruism as passion. It marks, we may think, at the present time the climax of mind."¹²

To bind cell to cell for cooperation, that is the essence of social life. No cell is more intimately bound to another than man is to his fellows and his social group. The binding of the individual to his group represents, in fact, a loss of individual freedom and a gain in personal freedom through more or less complete identification with the social group. An identification in which the wholeness of the person is preserved only because it is a functioning part of a greater whole—society. In this process the consciousness of self may actually increase, the sense of personal identity may become even more vivid, and one's bondage to one's society more firmly established than ever. "Individuality," as the development of personal identity, is neither the contrary nor the contradictory of social identification, it is social identification.

¹²Charles Sherrington, *Man On His Nature*, Cambridge University Press, New York, 1941, pp. 387-388.

As Robert Frost has said:

"Men work together," I told him from the heart,
"Whether they work together or apart."

The organism becomes a person with a definite identity only through the process of socialization, the process of becoming identified with a social group. The physiological dependency of the foetus and the newborn becomes, in society, a socially organized dependency, a social dependency in which the interacting person finds the meaning of his life in his relation with other persons and their thoughts and activities. Unheeded the physiologically dependent infant would die. Unheeded the socially dependent adult falls into an apathy which may lead to death.

The prolonged period of infant dependency in man produces interactive behavior of a kind which within the first two years of the child's life determines the primary pattern of his subsequent social development. It is within this period that he learns to love others; the mother who has so consistently, intimately, and lovingly attended to his needs, the father, his brothers and sisters, and whoever else has participated in the process of satisfying his needs. Certain persons become to him the symbols of satisfaction, for they are always the objects which provide him with the means of satisfaction, and the first conditioning which the child undergoes is this: that persons who have fairly consistently been the objects which have provided the infant with the means of satisfying its needs now become satisfying objects in themselves. The satisfaction of its basic needs become indissolubly associated in the infant's mind with persons who have become linked with those satisfactions. The mother is, of course, normally the principal producer of satisfactions and she becomes the first love-object of the child. In this sequence of events can be seen the determinants, as it were in high relief, of the pattern of life which every person everywhere seeks to secure, namely, a state of dependency in which one's needs are satisfied by persons whom one (therefore) loves. What human beings desire most of all is to have their needs satisfied, security. They also want to feel dependent, either upon some mother-ideal, a deity, or other persons, or narcissistically upon themselves, but dependent they must feel. Man does not want to be independent, to be free in the sense of functioning independently of the interests of his fellows, freely and detached. This kind of negative independence leads to loneliness, isolation, and fear. What man wants is that positive freedom which follows the pattern of his life as an infant within the family, dependent security, the feeling that one is part of a group, accepted, wanted, loved, and loving, the positive freedom which makes the development of the per-

son emphatically a matter of personal realization in terms of his membership in the social group in the mutual interest of the person and of society, the opportunity to develop interdependently, not as an "individual" but as a person.

It is when men erroneously begin to think they can be independent of one another, the "social isolationists," that they begin to frustrate and hate each other, that they do violence to all that they are and create much psychological and social havoc. When men learn to understand how dependent they are upon one another, that they are interdependent beings in a great cooperative enterprise, that it is their nature to be affectionate, cooperative persons, when they understand that being anything else is to be in conflict with themselves and therefore with society, mankind will be a great deal healthier and happier than it is today.

We now know that if a child is inadequately loved it will develop as an inadequate social being. Not only this, we now know that the organism is born with an innate need for love, with a need to respond to love, to be good, and cooperative. Were the infant's needs adequately satisfied he could not help but be good, that is, loving. All of man's natural inclinations are toward the development of goodness, toward the continuance of a state of goodness and the discontinuance of unpleasant states.

The biological basis of love consists in the organism's drive to satisfy the basic needs in a manner which causes it to feel secure. Love is security. Mere satisfaction of basic needs is not enough. Needs must be satisfied in a particular manner, in a manner which is emotionally as well as physically satisfying. Babies as well as adults cannot live by bread alone.

It is in the organism's everpresent urge to feel secure that social life has its roots, and the only way in which this need can be satisfied is by love.

It is a discovery of the greatest possible significance for mankind that the ethical conception of love independently arrived at by almost all existing peoples is no mere creation of man but is grounded in the biological structure of man as a functioning organism. The implications of this discovery are of the very greatest importance, for it means that man's organic potentialities are so organized as to demand but one kind of satisfaction, a satisfaction which ministers to man's need for love, which registers love, which is given in terms of love, a satisfaction which is defined by the one word, *security*. This is what the person seeks all his life, and society, culture, and man's institutions, however inefficient some of them may be, all exist to secure that one fundamental satisfaction. The emotional need for love is as definite and compelling as the need for food. The basic needs of man must be satisfied in order that he may function on the organic level. But in order that he

may function satisfactorily on the social plane the most fundamental of the basic needs must be satisfied in an emotionally adequate manner for personal security or equilibrium.

To conclude, then, we see that the biological basis of cooperation has its origins in the same sources as social behavior, namely, in the process of reproduction; that social, cooperative, behavior is simply the continuation of the maternal-offspring relationship. Cooperative, social, behavior is therefore as old as life itself, and the direction of evolution has, in man, been increasingly directed toward the fuller development of cooperative behavior. When social behavior is not cooperative it is diseased behavior. The dominant principle which informs all behavior which is biologically healthy is love. Love, social behavior, cooperation, and security mean very much the same thing. Without love there can be no healthy social behavior, cooperation, or security. To love thy neighbor as thyself is not simply good text for Sunday morning sermons, but perfectly sound biology.

At a period in the history of the world in which men have turned their faces against each other, instead of turning the other cheek, these truths need to be cried aloud from every citadel of learning.

Men who do not love one another are sick. They are sick not from any sickness arising within themselves, but from a sickness which the malorganization of their personalities, and hence of their societies, has thrust upon them. The belief in false values, in competition instead of cooperation, in class and race and national prejudice instead of love, in narrow selfish interests instead of altruism, in atomism (especially atom-bombism) instead of universalism, in the value of the dollar instead of the value of man, represents social man turning upon all that is biologically good in him.

Science shows us that the way to survival and happiness, for all mankind, is through love and cooperation, that do what we will our drives toward goodness are as biologically determined as are our drives toward breathing. Our highly endowed potentialities for social life have been used to pervert and deny their very nature, and this has led us close to the brink of disaster, a disaster which spells doom unless we realize what we have done and take the proper steps to undo it before it is too late. For we cannot deny the power of the world forces which we share with all life and which have reached their highest development in our potentialities as human beings, without destroying ourselves.

Our world at the present time is largely directed by criminally irresponsible adventurers and cynical and complacent men who have grown old in the way of self-interest and ultranationalism. Unless their place is taken by men of under-

standing and humility whose guiding principle is love, the world of man is doomed.

The life of every human being is a part of our own, for all of us are involved in mankind, and each one of us in the western world has become a problem in search of a solution. We now know the answer to the problem. It is up to us to make it known and to apply it. In the immortal words of a minister of the gospel of an early discoverer of these truths,

"No man is an *Iland*, intire of it selfe; every

man is a peece of the *Continent*, a part of the *maine*; if a *Clod* bee washed away by the *Sea*, *Europe* is the lesse, as well as if a *Promontorie* as well as if a *Mannor* of thy friends or of *thine own* were; any man's death diminishes *me*, because I am involved in *Mankinde*; And therefore never send to know for whom the *bell* tolls; It tolls for *thee*."¹³

¹³John Donne, *Devotions*, xvii, 1624, Nonesuch edition, edited by John Hayward, Random House, New York, 1928, p. 538.

AMOEBA PROTEUS



Push the protoplasmic paw out into space
Glassily melting.
After it, air-bubbles, food-specks, carbon and nitrogen
Eagerly pelting
This the adventure; bravely to finger the unknown
In all directions,

Sampling your water for light, shade, oxygen, algae;
Making selections.
Thus through the eons we trace you, magically mobile
Yet ever unchanging,
Deep in the green and primordial mud slowly
Dividing and ranging.
Oh valiant amoeba! Not for you the ignominious
Shelter
Of frog-blood, human blood, where, with your kind you
Might
Stupidly welter.
Lonely and silent you wrought your translucent being
To suit you.
We, the adventurers, in our own journey through space,
Salute you!

Winifred Duncan

Biology, poetry and sculpture are vocations of Winifred Duncan. The vignette is a bas relief by her: The God of Pulque.

THE NEW FEDERAL COMMISSIONER

The confirmation as Commissioner of Education of Dr. Earl J. McGrath, founder and editor of *The Journal of General Education*, and Professor of Education at the University of Chicago, gives immense satisfaction to all who have been concerned with the continuing crisis in higher education. The new Commissioner, as a member of the President's Commission and in his capacity as editor of the *Journal*, has been a powerful force in bringing forward the general education movement, which is now wide-spread over the nation.

Dr. McGrath has been associated with the work of the Foundation for Integrated Education not only as a Sponsor, but also until now as a member of the Executive Council of the Research Coordinating Board. That the office of Commissioner will be administered in terms of the integrative needs of American education and human society may be reasonably assumed. At present, general education has to rest all too much upon the basis of lightly correlated parallel courses in the principal disciplines. Yet emphasis on basic studies means that the hands of educators will be eventually forced as regards valid concepts to tie the disciplines together. To have as the Commissioner someone who knows so well the distinct advantages, and no less the present inadequacies of general education, should be truly invaluable. The country and President Truman are to be congratulated upon Dr. McGrath's acceptance and confirmation.

FIRST RECORDINGS OF THOUGHT WAVES

The discovery of a new electroencephalogram, distinct from alpha activity, which seems to be directly related to the thought process, has been noted by four psychologists at Tufts College. During the course of experimentation on counting eye movements in reading, a 10-cycle/sec disturbance in the reading record was noted, and further investigation indicated that this disturbance was actually a new electroencephalogram.

The four psychologists, John L. Kennedy, Robert M. Gottsdanker, John C. Armington and Florence E. Gray, report in *Science* (November 12, 1948, Vol. 108) that this new EEG, which they call "kappa waves," is found to be most prevalent in situations which are usually classed as involving thinking.

Several situations have been found which dependably produce kappa waves, one of which is mental arithmetic. In the accompanying figure 1, line A is the EEG taken on a subject engaged in multiplying two-digit numbers (eyes fixated). Line B is a comparable record when the subject was attempting to "keep his mind a blank" (eyes fixated). It will be noted that kappa waves intrude occasionally even when the subject is try-

ing not to think, which suggests that the waves correspond to "thoughts" during the period of attempted voluntary inhibition of thinking. Other situations which have been found to bring out a large amount of this rhythm are learning tasks, such as nonsense syllables; memory tasks, such as naming the 48 states; and problem solving, such as that involved in mastering a finger maze.

A number of different controls have been employed during the making of these tests. First, there was the possibility that kappa waves were due to periodic physiological changes. However, there was no relation to the breathing cycle or to unusual or forced breathing. Likewise, the bursts were independent of pulse rate or of eye movements and blinks. Talking aloud or to oneself is not associated with the rhythm, nor does merely hearing a stimulus or making the response of key-pressing produce kappa waves. At the same time, the voluntary control by the subject induced by verbal instructions has been found to be important in the production or nonproduction of kappa waves.

In view of this evidence, the investigators feel certain that kappa waves are not directly related to previously described bioelectrical phenomena,

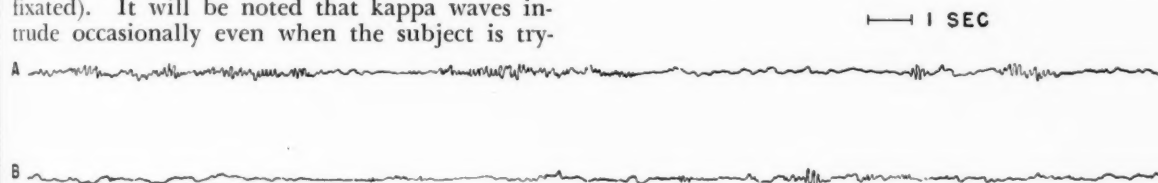


Figure 1

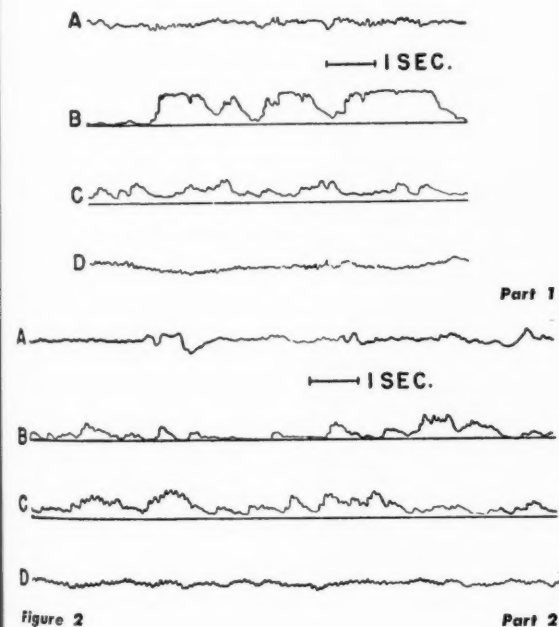


Figure 2

although they naturally resemble the alpha rhythm closely in frequency. The conditions for occurrence are completely different, even opposite. Alpha waves generally increase in amplitude when the eyes are closed, but kappa waves show no regular differences between conditions of eyes open and eyes closed. Mental arithmetic, which induces frequent kappa bursts, often inhibits alpha. Figure 2, part 1, shows a section of record in which kappa (line A) and alpha (line D) were recorded simultaneously while the subject was doing mental multiplication (eyes fixated). Line B is the accumulation of kappa; line C shows the accumulation of alpha. It is evident that kappa bursts are frequent and are unrelated to alpha activity. Part 2 of the figure shows a comparable section of record when the subject's eyes are closed and he is trying to keep his mind a blank. Here, alpha activity is high and kappa low.

The investigators further note that the position of the electrodes, placed just back of the external canthi of the eyes, suggests that the source of kappa bursts may be the temporal lobes of the brain.

THE "TLV" PATTERN ON COSMIC MIRRORS OF THE HAN DYNASTY*

Schuyler Cammann

Among the best-known of the Chinese bronze mirrors in our Occidental museums are the so-called "TLV" mirrors, most of which date from the Han period (202 B.C.—220 A.D.). The general type is quite common, and it has a number of subtypes differentiated by variations in background within the basic pattern. The latter is characterized by three sets of angles, resembling the letters T, L, and V. (See figure on the cover of this issue of MAIN CURRENTS. These marks have long puzzled Western Orientalists, though Chinese connoisseurs, since at least the twelfth century, have merely dismissed them as "custom." This later attitude ignores the fact that in Ancient China almost nothing was ever used for mere ornament, without some symbolic meaning. We shall see that the basic TLV pattern was apparently no exception to this general rule.

As an object of ritual [the mirror] was required to represent a complete symbol of the Universe in microcosm, including the sky. And significantly, the circular outer rim of most of these mirrors has a continuous pattern of conventionalized clouds commonly known as the "drifting cloud" design.

If the pattern on the mirror was intended to represent the Universe, we shall still have to account for the presence of the angles on it. The inverted V's help to establish the whole inner pattern—as is obvious on some of the later mirrors, on which the T's and L's were left out. They serve to give the central portion of the mirror the appearance of a square placed in the middle of a cross, which forms a simple illustration of the ancient Chinese concept of the Five Directions—North, South, East and West, and Center—with additional connotations involving the Five Elements and the Four Seasons. The central square must represent China as the "Middle Kingdom," while the area around it, extending off into the four directions, represents the "Four Seas."

Thus, the chief function of the V's was apparently to mark off the boundaries of the four quarters of the world; while the spaces within the V's merely represented the non-existence of land. The essential separation of the latter from the rest of the pattern is evident. For even when

all the available reserves in the pattern are filled with scroll designs or mere curlicues, the space within the V's is almost always left severely plain.

The central square of the mirror, which we have seen represented China, has a very prominent boss representing the center of the Universe. In terms of Han philosophy, the boss could have been considered philosophically as the center of the Universe in an abstract sense, representing any point around which the various elements and forces that constituted the Universe were in harmonious balance.

The explanation for [the] T's is provided by the traditional concept of the Four Gates of the Middle Kingdom, mentioned in Chinese classical literature. This idea was also reflected in the four gates to the *Ming T'ang*, the four inner gates of the Han 'place of sacrifice, and those of the imperial tombs—all of which were apparently built as representations of the Universe in microcosm.

The inverted L's would appear to be more difficult to explain. But they, too, seem to have represented barriers. The fact that the boundary lines are bent, yet not completely closed, has several possible explanations. In the first place, the Han Chinese apparently did not conceive of precise boundaries outside of China: even the "Four Seas" were not entirely set off from each other but had linking territory in common. Secondly, an opening was no doubt left to symbolize the gateway by which the reviving rains and the winds of the four directions came into the central portions of the Earth from its outer boundaries.

As for the eight, slightly larger "nipples" usually placed two in each quadrant opposite the ends of the T's outside the inner square, they probably represented the Eight Pillars, mountains that traditionally supported the canopy of heaven. These bosses very probably had still other astrological and cosmological meanings for the men of the Han, beyond those we have suggested. But it is enough for our present purpose if we have demonstrated that all of these conventionalizations rightfully belonged on the portion that stood for the Earth, in the mirror's symbolic representation of the Universe in microcosm.

Let us consider for a moment the various beings that were shown with these TLV patterns as occupants of the four quadrants representing the "Four Seas." The simpler mirrors usually have only eight of them, either animals or birds—generally quail. Four of the former are the well-known four creatures of the Four Directions, the Azure Dragon of the East, the Red Bird of the South, the White Tiger of the West, and the Black Tortoise (and snake) of the North. Previous attempts to explain some of [these animals] as symbols of constellations seem quite out of place. Not only were all these creatures terrestrial ones, but most if not all had some valid associa-

*Abstracted with permission from an article in the *Journal of the American Oriental Society*, Volume 68, No. 4, October-December 1948.

tion with the Four Seas on which they were depicted.

The only celestial elements in the inner pattern of the mirror that represents that portion of the Earth under the dome of heaven are the sun and moon, which were thought to pursue their courses between heaven and earth. In other words, the patterns on the TLV mirrors, regardless of their complexity, apparently depicted the Universe as though seen by a Heavenly eye looking down from the palace of the Supreme Emperor through the hole in the dome of the sky.

Lastly, there is the matter of the inscriptions around the inner circle within the raised rim of the more elaborate types of the TLV mirrors. A few of the sentiments frequently expressed deserve a brief review.

The sentiment which helps to indicate why a Universe pattern was shown on these mirrors is expressed rather cryptically by the phrases, "Azure Dragon on the left, White Tiger on the right, Red Bird in front, and Black Warrior (tortoise and snake) behind." In other words, the owner of the mirror is pictured figuratively as being at the center of the Universe, with the Four Directions symbolized by the Four Spirits on the four sides of him.

Another related sentiment, expressed in several variations, says, "May your sons and grandsons occupy the center." This thought has been rather materialistically interpreted. However, such an interpretation is necessarily incomplete, for it disregards the fact that to the men of Han, all these expressions regarding occupying or ruling the center had other, more metaphysical meanings.

In the first place, people of that time believed that fortunate immortals ruled over palaces on K'un-lun Shan at the center of the World where they enjoyed eternal bliss. Secondly, it was thought that if one could live in harmony with all the elements in one's private universe—thereby being figuratively situated at its axis—one could not only control it, but could have power over the greater Universe as well. This could signify the possession of magical Taoist powers; or it could mean more simply that a person who occupied the center of his own universe, possessing complete adjustment to it (or—to use a modern term for a very old concept—personal integration), would automatically possess the natural strength and self-confidence that came with that harmony.

It should be emphasized that there is still no absolute proof that the basic pattern on these mirrors was taken from the markings added to the sun-dial, or from those of the *liu-po board*, or from the lay-out of the *Ming T'ang*, the Imperial Palace, or a tomb. It seems probable that no one of these was necessarily derived from any one of the others. All of them must have drawn their patterns from a common source; yet that need not have been a concrete thing. It could well have been merely a common conception of the nature of the Universe, from which men conceived various simple, ordered diagrams to symbolize the great idea of Universal harmony. And through these diagrams, such as the pattern on the mirrors, an individual could come to feel that he occupied the center of the greater Universe, under the direct influence of Heaven.

NEWS AND NOTES

SELF-ACCREDITING FOR COLLEGES AND UNIVERSITIES

A development of interest arising from the January meeting of the Association of American Colleges was the decision to join with four other major higher education groups to create a united body to serve as an accrediting agency. This will function in place of the Association of American Universities, which recently abandoned its practice of accrediting colleges and universities. As it is now, the more than forty existing accrediting agencies, representing many professional fields which accredit, or refuse to accredit, the training of colleges and universities, are creating such a condition of confusion that many college administrations feel their authority to run their own in-

stitutions is threatened, and that the specialized professions are tending to dominate all curriculum revision. The Joint Committee on Accrediting just formed proposes to include two representatives each of the five major college and university associations, which would determine the basic principles of accrediting and act as a tribunal to hear appeals from decisions made by accrediting agencies, retaining the final authority. In this way, as Chancellor R. G. Gustavson of the University of Nebraska said, "authority and responsibility can be kept where they belong, namely, with the administrative bodies of the institutions of higher learning". This is an important step forward for the general education and integrated education movements, since accrediting has been one of the major obstacles to curriculum revision in many instances.

FEDERAL AID FOR HIGHER EDUCATION

The need to make available the facilities of American colleges and universities to a larger number of talented students who are now prevented from seeking a higher education because of lack of funds was emphasized by Dr. Byron Hollinshead, President of Coe College, Cedar Rapids, Iowa, at the meeting of the Association of American Colleges held in New York City January 10-12, 1949. Dr. Hollinshead recommended that such aid should take the form of Federal Scholarships given to individual students for use at any college they might choose, whether denominational, independent, or public. However, Dr. Hollinshead advocated additional Federal assistance for colleges independent of state or church support, in order to provide equipment and capital improvements which are desperately needed. State universities are the responsibility of the citizens of those states to which they belong, and churches, which insist on full control of their colleges, should likewise accept full responsibility for their support, but independent and unaffiliated colleges are without recourse to such sources of help, and therefore should have federal assistance.

ONE WORLD FOR EDUCATORS

The achievement of an international organization to unite the teachers of the world in an effort to achieve peace and mutual understanding is a tremendous undertaking, and one which makes slow progress. Therefore any new steps taken are worthy of recognition. On November 3d and 4th, 1948, in Paris, such a step was taken with the formation of a Joint Committee of organizations in this field. Dean William F. Russell of Teachers College, Columbia University, who is the President of the World Organization of the Teaching Profession, represented that Organization officially at the meeting. FIPESCO, the federation of secondary teachers, was represented by A. M. Gossart, France, and IFTA, International Federation of Teachers Associations, which is largely an organization of elementary teachers, sent Louis Dumas, its secretary-general.

TOWARD ONE WORLD

In a world which is characterized by increasing emphasis upon political and ideological differences between nations and peoples, any efforts made to establish a valid basis for cooperation and peaceful world society are certainly deserving of respect and recognition.

The organizations which are working to establish such cooperation are many and diverse, yet all have as their aim the superseding of national

boundaries and the achievement of real world unity. Probably the most influential and widespread of these groups is the United World Federalists, who would like to see the United Nations become a real world government through amendment of the Charter. Their active and intelligent program of public information has enlisted the support of many people, as has Clarence Streit's Union Now, which promulgates the doctrine that nothing short of political and economic union can save the world from total annihilating war. These encompassing aims are furthered to a large extent by the activities of many other organizations, such as the World Republic, staffed largely by part-time students, the Emergency Committee of Atomic Scientists, under the leadership of Albert Einstein and Harold Urey, and others.

One of the oldest organizations in this field is the World Citizenship Movement, which is fully as well-established in Great Britain as in the United States, and has active branches in many other countries. World Citizenship has a three-fold mission: to promote World Unity, the development of a democratic society in which citizenship shall be practised on a world basis; World Government, which consists first in research and public action as to the supra-national institutions essential for world justice and administration; and World Citizenship, which would give universal recognition to the status of world citizens. This movement, in addition to its own activities which include the publication of a monthly paper, co-operates whenever possible with other organizations having kindred aims.

Particular emphasis on the role of education in establishing international understanding is made by the One World Congress, which was incorporated in March 1947 with the specific objective of mobilizing the voluntary organizations for coordinated activity in the major areas of peace-making, with special regard for the function of world-wide educational campaigns and action projects. The work of the Congress is based on the conviction that the non-governmental citizen organizations of the world should make common cause in attacking the world's number one problem—the achievement of a just peace. Towards this end, they plan to hold the first One World Congress for Peace in Paris at Christmas, 1949, to which all representative organizations are invited to send delegates who will work together on concrete plans for inter-organizational cooperation on a world scale. It is hoped by this means to lay the groundwork for a permanent federation of organizations established for the purpose of peace-making. One World Congress reports that impressive support for the Congress has been secured in France, both among her most respected statesmen and among leaders of citizen organizations.

NEW BOOKS

Before the present reviewer lies a heavy volume of 647 pages, each 8½ x 11 inches (the same size as that of MAIN CURRENTS) handsomely produced: *Profit Sharing Manual*, a digest and analysis of 84 representative Profit Sharing Plans, Council of Profit Sharing Industries, 15 East 16th Avenue, Columbus, Ohio, 1948, 647 pages, \$10, edited by Robert S. Hartman.

Within these covers may well lie the economic data and procedures with which to convert the American business dream into a reality. Since the alternative to the gospel of profit-sharing is likely to be a nightmare of frustration and conflict, ending in a dreadful awakening, we do our readers a service in notifying them of the existence of a movement so significant.

But perhaps we should ask ourselves what is the American economic dream!

It centers on an abundance of goods, physical security to have and enjoy them, and services which should simplify individual life more and more. Unfortunately, an abundance of things is meaningless unless accompanied at lowest by mental security, leisure, and culture; at highest by the creative life of the free spirit. The present reality has a nightmare touch of excitements and pleasures sought amid even physical uncertainties, while the economic system runs a temperature.

The dream shrinks and swells as the price temperature, wages pulse, employment respiration, and spending metabolism in general vary. At the moment, as the foreign lending program and domestic military spending slackens, we seem headed for increased unemployment, a belated and reluctant fall in prices, and possibly a war. However temporarily beneficial the war may be for major industries seems to be a minor question. The patient is likely to die while the operation is triumphantly concluded.

Peace and stability are necessities for genuine economic health. Such security must begin in individual businesses. When labor and management share in the profits right there where they can see what they are doing, the American dream begins to make waking sense.

The editor of this volume is the executive officer of the Council of Profit Sharing Industries. He is also Associate Professor of Philosophy at Ohio State, and a member of the Research

Coordinating Board of the Foundation for Integrated Education. All these activities make his words in this great volume significant. He tells us (pages 3-6) that profit-sharing has a philosophy, based on three principles:

"1. That a business should be considered as a team and every employee a member of the team. 2. That every man has a human right to participate in the increased prosperity to which he has contributed through the teamwork of the business. 3. That the recognition of the dignity of each individual will result in higher prosperity for the business as a whole.

Therefore, the Declaration of Principles continues: 'The Council considers as the essential factor of economic life the human person.' In this sentence is contained what we may call the philosophy of profit sharing. Many textbooks of economics treat labor as much as a commodity as they do capital. Unfortunately this kind of thinking, legitimate though it may be in economic analysis, has pervaded our thinking even when we are concerned with economic policy and practices. *Labor is not a commodity, it is people. It is this simple truth which profit sharing industries have translated into practice.*

Profit Sharing Industries believe that all participants in American business and industrial life, workers, stockholders and consumers, have a common stake and interest in the economic productivity of this nation. They believe that worker, manager, and owner can be united for the common benefit of all. Profit Sharing Industries reject the un-American concept of the class struggle.

Several political doctrines prevalent in the world today continually assert that there are only two classes of people in the modern world, the workers and the owners, and that one must inevitably rule and exploit the other. The communists aim at a dictatorship supposedly in the interests of the workers. Fascist dictators purport to support the owners. Actually the attempt to divide into classes is a fraud to set groups in our society at each others' throats so that left or right dictators can take advantage of the ensuing chaos and seize power for their own benefit.

Profit sharing, on the other hand, is a philosophy which does not recognize artificial divisions between men. It is the expression not of economic or political theory but of practical morality. Profit sharing industries have discovered the simple truth that Man himself is the greatest natural resource of any country and one that our economists have largely neglected. They agree with W. Howard Chase: 'In the past perhaps 95% of management's brains and energies were devoted to solution of technical problems and only 5%—if that—to human problems. In the future, management of corporations that survive

will devote the larger share of their brains and energies and sympathies to human problems.'

Profit sharing industries have already practiced these words. They regard profit sharing as one of the means to tap the resources of human cooperation and to expand the system of free enterprise to include every man. Such an expansion of American capitalism has brought them labor cooperation and prosperity.

Profit sharing as a means of expanding the system of free enterprise is nothing new nor is it confined to America. It has been practiced all over the world for as long as the system of free enterprise has been in operation, in this country as far back as 1794, when profit sharing was advocated and practiced by Albert Gallatin, Secretary of the Treasury under Jefferson and Madison, in his glass works in New Geneva, Pa., on the ground that the 'democratic principle upon which this Nation was founded should not be restricted to the political processes but should be applied to the industrial operation.'

Both the Catholic and the Protestant churches have advocated the moral function of property, the Protestant churches in the Malvern Manifesto of 1944, the Statement on Social Justice and Economic Reconstruction of 1942, the Delaware Conference of 1942, and the National Study Conference on the Church and Economic Life in Pittsburgh, 1947. The Catholic Church has maintained the principle that the development of human personality is the purpose and justification of private property as an institution. This goal can be fully achieved only as private property is used with a sense of responsibility by the owner for community service as well. This is clearest in the classical letter of Leo XIII in 1891, 'The Condition of the Working Classes,' and of Pius XI in 1931 on 'The Restoration of Social Order.' In the latter Pope Pius XI suggests, in a classic passage, that the economic machine would run more smoothly 'in the present state of human society' if the wage-contract, when possible, were to be 'modified somewhat by the contract of partnership, as is already being tried in various ways to the no small gain both of the wage-earners and of the employers. In this way wage-earners are made sharers of some sort of ownership, management or profits.'

Profit sharing is world-wide and advocated on a world-wide basis. There are associations of profit sharing industries in England, New Zealand, France and Austria.

The recent formation of the Council of Profit Sharing Industries in this country has given a new initiative to the movement. The Council has received an amazing number of inquiries from this

country, Canada and Mexico, and from India, China, Australia, Italy, France, Holland, Sweden and other countries. These countries apparently hope that the genius of American management will concentrate on the social inventions necessary in the field of human relations."

Professor F. S. C. Northrop opens with these words his editorial introduction to *Ideological Differences and World Order* (Studies in the Philosophy and Science of the World's Cultures, Yale University Press, 1949, 486 pages with index, \$4.50):

"The need for world order, bringing international disputes under the rule of law rather than leaving them subject to suicidal decisions by force, is obvious. Unfortunately, the difficulties which contemporary investigations in the social sciences and the philosophy of culture reveal to be in the way—difficulties which center in considerable part in ideological differences—are not so generally recognized yet are nonetheless evident and real. In fact, the neglect of them is probably the major reason for the failure of the League of Nations and for the serious weaknesses already evident in the Court of International Justice, in the organization of the United Nations, and in proposals for world government. It becomes imperative, therefore, if the latter institutions and proposals are to become effective, that less attention be paid momentarily to the goal of world order and that greater attention be given (a) to the ideological differences which present obstacles on the way to that goal and (b) to the methods suggested by the contemporary social sciences and the philosophy of culture for the removal of these obstacles. It is with this undertaking that this book is primarily concerned.

That its authors are many rather than one is dictated by the character of its problem. This problem requires for its understanding a knowledge of the major cultures of the world and their diverse ideologies. It is very difficult for a person living in any one culture, unconsciously or consciously dedicated to its ideology, to do justice to the quite different economic, political, legal, moral, religious, and artistic doctrines and cultural values of people of other cultures."

The editor refers to regretted omissions of papers on India by the late Ananda Coomaraswamy, and on some aspects of Soviet Russia and Latin America, and raises in brief form questions answered by his contributors, and then proceeds (p.v.):

"The difficulties in the way of world order center not merely in the ideological differences of the different peoples and cultures of the world but also in the methods used by social scientists and humanistic scholars in their determination and

*Director of Public Relations, General Foods Corporation. See *New York Times*, November 8, 1947.

analysis of any given culture. For example, certain historians, anthropologists, sociologists, and philosophers have tended to regard social and cultural phenomena as parts of an objective, unchangeable process running either in inevitable cycles or subject to deterministic laws, men and their ideas and ideals being supposedly but mere puppets or inescapable consequences of the unalterable cultural process. Recently, however, it has been noted that the facts of a culture fail to make sense until the ideas or philosophy of the people indigenous to the culture are grasped. Once it is realized that ideas are relevant to social and cultural institutions and events and that the ideas of men can be altered by men themselves, then the way is opened for placing the fate of men and their cultural institutions and values, in significant part at least, back in their own hands. For this reason the later chapters of this volume deal with the issue concerning the respective roles of ideological and non-ideological factors in social phenomena, historical processes, and human behavior, as this issue exhibits itself in contemporary anthropology, sociology, economics, psychology, and the philosophy of culture."

The twenty-one contributors to this volume provide one with hours of exhilaration and enlightenment not alone because they are mature and experienced, but because, for the first time in many years, a whole galaxy of talent has been gathered to make living philosophy and even immanent metaphysics, business of first priority.

The movement to integrate all knowledge has scarcely begun to stir us. The studies required to release us in a forward surge are only now being identified. Two or more past generations have been habituated to the notion that philosophy is science, and science is physics. Too few of us realize that physics is really today metaphysics, and that smug confidence in materialism and mechanics was a sad mistake of the last half of the 19th century. That there is no world of ultimate rational and intelligible relationships for all learning and experience is a common assumption of our bewildered times. Small wonder that some reviewers were thrown off balance by portions of this volume, such as *The Pythagorean and Platonic Scientific Criteria of the Beautiful in Classical Western Art* (by Matila Ghyka).

Advance in a hopeful direction is represented by Dr. Northrop's present co-writers. The forward movement is as yet a series of sallies, daring but not yet properly organized. Dr. David Bidney *The Concepts of Meta-Anthropology and its Significance for Contemporary Anthropological Science*, for example, can say (p. 331-2):

"Each science may be thought of as having its own metaphysical aspect, and thus one may speak of metaphysics, meta-biology, meta-psychology, meta-anthropology, meta-ethnology, or meta-

linguistics;" and (p. 332): "... metaphysical thought may be postscientific in the sense of going beyond the data of science and yet being compatible with scientific thought. The concept of God, for example, is not subject to scientific verification though it may be a postulate of thought quite compatible with all available scientific evidence."

We are left for the moment in some doubt whether not God but a new pantheon of gods is emerging: let us say, Metamedicine in place of Minerva, and Meta-meteorology instead of Jupiter Fulminator. But these ventures are hopeful, the vigorous, bold progress of a new company of scholars are coming freely together. There is at least real movement and it is toward metaphysics. It should not be long now before a semblance of good order appears in the ranks of scholar-philosophers. Professor Northrop, certainly, is doing his part in calling up the company.

The editor of this valuable volume is indebted to the Viking Fund for a grant which made this research and other research in this field possible. His readers will be no less in the same debt. All too few Funds address their aid into channels which serve the human mind directly.

The second part of the intermittent World Wars which characterize this century required the exploitation of colleges and universities in a sense new in our history. Professional military and naval academies and land-grant colleges might produce a skeleton corps of officers, but now the whole machinery of education had necessarily to take over a special military role, the duty of producing immense numbers of persons trained or quickly trainable to produce and use every conceivable mechanical means of violence. Higher education was now called upon to train the whole male population to kill communities and lay waste whole nations. Specialization—as against a good higher education for living for citizenship—had already been a matter of deep concern to many leaders in education. Now this fundamentally lop-sided and unsocial education was to be directed to purposes of destruction which it had, by its own mistakes, helped to make inevitable.

The shock of awakening to all-out and anti-cultural uses of secondary and higher education led to earnest self-examination upon most campuses. The chief universities and colleges labored at plans to counterbalance the breakdown, faculties usually working through special committees for many months, in some cases for two years or more. The questions at bottom were: What had brought us to the verge of destruction? How was education to save itself, our youth, and this country?

Reports of these efforts to right the over-turned world of learning and teaching show that many campuses achieved an acute awareness that the failure was in philosophy. Insight, reflection, a sense of the whole, of beauty and aesthetic creativity, a balance of heart and head, had been of minor importance, or (if valued here and there) not achieved in fact. In discussing the central issue, faculty members would almost invariably hear someone observe that "integration is a process," that "the goal is an integrated person," and that "teachers for such ends must be found." Everywhere also failure "to give the humanities the same rank in effectiveness as the sciences" was lamented. But agreement beyond such obvious points was seldom, if ever, achieved, even when questions of educational content and of fundamental educational philosophy were brought forward. Re-reading close and careful original reports of committee discussions, in contrast with published summaries and subsequent events, is almost painful. The honest and penetrating self-analysis, the buoyant release and hope, and the glow of eagerness shining through—all this was usually arrested short of final accomplishment of an over-all program of conceptually well-knit studies.

Nevertheless much was accomplished. First, several great universities envisioned the real goal: philosophically important knowledge shared by the faculty and hence conveyable to students. Second, the general education movement came into existence.

Dr. Earl J. McGrath, the new Federal Commissioner of Education, (then Dean of the College of Liberal Arts of the State University of Iowa, founder of the *Journal of General Education*, and member of the President's Commission on Higher Education) was a principal one-man force in bringing the new movement into wide acceptance.

He has now edited and issued two volumes based on an extended study, *Social Science in General Education*, and *Science in General Education* (William C. Brown Co., Dubuque, Iowa, 1948, 286 pages, \$2.50 and 400 pages, \$3.25). Specimen courses of study set up under the new impulse are described by faculty members in charge. The institutions represented are from all parts of the country. In each volume, Dr. McGrath discusses the trends as a whole. These compendia, therefore, bring us up to date.

What lies beyond this date concerns integrative education developed at the conceptual level.

Charles Morris is well known as the author of two books which might have been written by two different men. (Which one might be the real

Dr. Morris is not clear as yet!) *Paths of Life*, 1942, aimed to establish human types as based upon Gautama, Maitreya, Jesus and other Personages. It was inspiring to receive such a daring religious-psychological thesis from an associate professor of Philosophy at the University of Chicago, who is also a teacher at another institution (the New School for Social Research) which gives few signs of interest in the traditional language of the spirit. *Signs, Language and Behavior*, 1946, however, was as rigorously behavioral as *Paths of Life* was free and far-seeking. Now in a new volume, *The Open Self*, (Prentice-Hall, New York, 1948, 179 pages with index, \$3) Dr. Morris returns to his interest in the whole, and especially the upward-opened part of man. He writes easily of the nature and types of men and of society, drawing on Sheldon's studies of types, and on his own studies of motives, to get at the nature of our problems. Toward the end (p. 167-8) he summarizes our situation:

"A closed America would save us from the difficult task of admitting that anything is wrong with us, and even more difficult task of righting what is wrong. We have seen that it is hard for the closed self to admit its distress, to discard its defensive masks, to devise new techniques for its greater satisfaction. Its tendency is rather to cover up its problems, to clutch tighter its partial satisfactions, to turn in fury on those who propose the slightest change. It is this danger which now threatens the vitality of the American heritage, the danger of holding on to what we have attained instead of daring to actualize what we are by tradition and in aspiration.

The temptation to closure might work itself out somewhat in this manner. Nothing would be done to reduce realistically the underlying frustrations and anxieties in our midst. Any attempt to reformulate existing ideals or to improve existing social techniques would be condemned as 'un-American.' By a control of the agencies of mass-communication the status quo would be glorified and identified with the American ideal. Any deviation from it would be resisted as treason to freedom and democracy. As time went on and unmet problems sharpened in intensity, those groups which demanded an improvement of their situation would talk more pointedly of the need for drastic change. This would heighten anxiety, and more and more repressive measures would be invoked to preserve order. At this point a war with an outside power would be in the making, or at least the threat of war, to silence opposition and to capture the loyalties of the people. By invoking the symbols of nationalism, the individual would be forced to identify himself with the movement to the closed society or be branded as a traitor to his people. Under the threat of modern total war, total control of society would become inevitable."

THE SUMMER WORKSHOPS ON INTEGRATION of the Foundation for Integrated Education

Both the Eastern Workshop at Wellesley College in June, and the Western Workshop, at Montecito School, Montecito, California in August will follow the successful precedent of the first national workshop, University of New Hampshire, 1948 (as reported verbatim in *Issues in Integration*). That is, formal papers and extended addresses will again be avoided. Resource leaders and chairmen will, as before, engage the full participation of all members of the Workshop. Thus a genuine exploratory process will be followed through.

All prospective participants are recommended to read *Issues in Integration* in preparation for the forthcoming discussion. If not in your college library, *Issues in Integration* may be obtained from the Foundation for Integrated Education, 60 East 42nd Street, New York 17. The 1949 Workshops, announced herewith, will take their start where *Issues* and recent numbers of MAIN CURRENTS IN MODERN THOUGHT leave off.

At both Eastern and Western Workshops, detailed accounts of the integrative research projects of the Research Coordinating Board of the Foundation will be made available. The constitution of this Board, under the Chairmanship of Dr. Henry Margenau, Professor of Physics and of Natural Philosophy, Yale University, will be found below. About half of the members of the Board have indicated their intention to be present at the Eastern Workshop.

As the personnel—except for the Foundation's Counsellor on Studies and other members of the Staff—will vary, separate detailed programs and

announcement of Chairmen and Resource Leaders will be made available upon request.

The general course of the programs will be nearly identical, commencing in each case with a Sunday evening welcome and introductory session, and consisting thereafter of two morning sessions and one evening session daily.

The Eastern Workshop begins Sunday evening, June 26th and ends Thursday evening, June 30th. The Western Workshop begins Sunday evening, August 21st, and ends Thursday evening, August 25th.

Please note that all afternoons have been kept free of meetings for excursions, swimming, and impromptu gatherings.

The evening sessions will be at the time shown so as to allow for discussion and conversation and yet permit adjournment at a reasonable hour.

Inquiries for both the Eastern and the Western Workshops may be addressed to the Foundation for Integrated Education, 60 East 42nd Street, New York 17; and for the Western Workshop (alone) to Mr. J. Randolph Sasnett, Colonial Manor, 967½ W. 30th Street, Los Angeles 7, Calif.

MORNING PROGRAMS

Session A.	9:00 a.m.—10:30 a. m. <i>Problems in Content Interrelationships</i>
Monday,	The Role of Contemporary Concepts in the Unity of Knowledge.
Tuesday,	Evidences of Unifying Concepts



EASTERN WORKSHOP, Wellesley College, June 26-30, 1949



WESTERN WORKSHOP, Montecito School, August 21-25, 1949

- Wednesday, Techniques for the Discovery and Utilization of Unifying Concepts
- Thursday, How Problems in Content Interrelationships Affect Intercultural and Interideological Unity.
- Session B. 10:45 a.m.—12:15 p.m. *Operative Problems in Developing Integrated Education*
- Monday, Operative Problems in Teacher-training for Integrated Programs
- Tuesday, Operative Problems in Defining and clarifying Objectives and Values
- Wednesday, Operative Problems in Intercollegiate Exchange of Ideas and Experience
- Thursday, Operative Problems in Local and Representative Experimental Programs

EVENING PROGRAMS, 7:30 p.m.

SUNDAY

Devoted to welcome and to identification of the central problem: the techniques and content

which are significant and required if art, philosophy, religion, and science are to constitute one valid, authoritative and central educational experience for all college students.

MONDAY

The laws of nature as described in the sciences of energy, life, and man. Bearings of these laws on the conceptual teachings of religion, philosophy, art, psychology, economics, history, communications, etc.

TUESDAY

The universals of the philosophies of Europe and of Asia, of antiquity and of contemporary cultures. Bearings of these universals on the conceptual teachings of science, religion, art, etc.

WEDNESDAY

The verities and values of religion as recorded comparably in the founding and history of the great faiths. Bearings of these verities on the conceptual teaching of science, philosophy, art, sociology, etc.

THURSDAY

The principles of the arts, and the principle of creative freedom. Abstract art and the laws of nature, the verities of religion, and the universals of philosophy, and aesthetic measure in their bearing on the conceptual teaching of other subjects.

MEMBERS OF THE RESEARCH COORDINATING BOARD

(Members of the Executive Council of the Board are starred, ex officio members double starred)

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JULIUS STULMAN (representing the Foundation for Integrated Education), President, Stulman-Emrick Lumber Co., Inc.

ORDWAY TEAD, Editor and Director, Harper & Brothers, and Chairman of the Board of Higher Education of New York City